SOCIAL TRANSFORMATION IN THE DELTA FROM THE TERMINAL PREDYNASTIC TO THE EARLY DYNASTIC PERIOD: A COMPARATIVE STUDY

VOLUME I

JOANNE MARY ROWLAND

A Thesis Submitted to the University of London for the Degree of Doctor of Philosophy

Institute of Archaeology

University College London

September 2003

To my mother for her encouragement, and to my father for the drive

Abstract

In this thesis I examine evidence for change in social and political organisation at four cemetery sites within the northeast Delta of Egypt. The time period with which I am concerned, the Terminal Predynastic to Early Dynastic, coincides with the final stages of a process of cultural and political development and integration from the early fourth to the early third millennium BC. The Delta has remained, until recent years, poorly researched, in comparison to the Nile Valley. This thesis makes an important contribution towards understanding the prehistory of this region through a comparative study of the mortuary evidence from the sites of Kafr Hassan Dawood, Kufur Nigm, Minshat Abu Omar and Tell Ibrahim Awad.

This thesis research has two over-arching aims: 1) to elucidate change in social and political organisation as reflected through the mortuary evidence at the key sites in the northeast Delta, and how this relates to the funerary record throughout Predynastic and Early Dynastic Egypt; and 2) to assess how the evidence from the northeast Delta sites affects our consideration of previous hypotheses regarding the development of social complexity in early Egypt.

In order to achieve this, the thesis gradually narrows its focus onto the Delta, following a discussion of previous hypotheses on the origins of state society in Egypt, and a review of temporal and geographic diversity in Predynastic and Early Dynastic burial trends. I have critically incorporated elements of socio-evolutionary theory within my theoretical approach, and evaluated aspects of previous research into mortuary contexts worldwide, to assess which elements I consider appropriate to include within my methodology. My methodology presents a new four-stage sequence of statistical analysis that seeks to maximise the analytical potential of mortuary data through investigation of a wide range of variables relating to the wealth and effort expended on the grave, and the changing relationship between these elements and the age and sex of the deceased. Geographical Information Systems technology is used for spatial analysis at the site of Kafr Hassan Dawood, to explore the data from a visual perspective.

The results prove both revealing and are, in some instances, quite unexpected. The analysis of the key sites reveals societies expressing organisational characteristics ranging from ranked to stratified, and striking differences in terms of internal site development. The widest temporal scopes for development are observed at Kafr Hassan Dawood and Minshat Abu Omar, where we witness the change from the early importance of kin groups with clear variability within ideology, to increasing cohesion in the latter stages of the sites' histories, with the declining importance of kin groups seemingly in tandem with heightening external contact. The height of prosperity visible in the latter history of the sites, however, is short-lived, with three of the four cemeteries falling into disuse. This decline would appear due to the economic repercussions of the rise of the centralised state on their livelihood.

Table of Contents

List of Figures

List of Tables

Acknowledgements

It would have been impossible to complete this thesis without the support of many colleagues, friends and my family. I trust I have been able to mention everybody within the limited space here.

The Institute of Archaeology

I was fortunate enough to be under the supervision of Mrs Barbara Adams for one year before her untimely death in 2002. During this short time she offered so much encouragement and inspiration and was genuinely delighted at the effect that her wonderful supervision had on both my work and confidence. Prof. Fekri Hassan, having supervised my Masters' thesis in 1997-1998, maintained his support into my PhD thesis. I am indebted to him for welcoming me as a member of the Kafr Hassan Dawood (KHD) excavation team in Spring 1998, and subsequently encouraging me to work on the material from KHD, providing unlimited access to the data. Dr Kevin MacDonald has been with me from beginning to end on this thesis. He has solidly supported me throughout and expended profuse amounts of red ink over the last four years. I would also like to thank Prof. Peter Ucko for his interest and some useful criticism. I must thank Prof. Clive Orton for his invaluable help and sheer patience with me, as a statistics' novice. I have learned a lot from him and I was delighted when he was made a Professor at the Institute a couple of years ago. I should also like to thank the following members of institute staff, past and present, for their help, advice and encouragement at various stages of my university career: Prof. John Tait, Prof. Harry Smith, Dr David Jeffreys, Dr Elisabeth Bacus, Dr Koji Mizoguchi. Thanks are also due to the staff of the Petrie Museum of Egyptian Archaeology, past and present, for their help over the years.

On the technical side, I would like to thank a number of people for their patience, instruction and help: Dr James Conolly and Dr Andrew Bevan for assistance on a number of occasions with the updating of the GIS. Mr Ash Rennie, whose door is literally always open, for computer help (and I invariably learn a couple of new computer tricks every time I need to call on him). I should also like to thank Mr Stuart Laidlaw and Mr Ken Walton of the photographic laboratory for their help in scanning photographs and slides, and teaching me how to shoot pictures for my slides for various conferences. Thanks are

also due to Dr Simon Doyle of the Centre for Advanced Spatial Analysis (UCL) who helped to transfer the initial GIS for KHD onto CD in 1998. I would also like to express my thanks to all the others who keep the institute running and have been of considerable help to me along the way, both in the general office and the library, with special thanks to Lisa Daniel, our postgraduate administrator, for words of encouragement and support.

Funding Bodies

I am indebted to the Arts and Humanities Research Board for funding my PhD research, and, in addition, for providing expenses enabling me to travel to Krakow for the first 'Origins of the State: Predynastic and Early Dynastic Egypt' conference during summer 2002. I am also most grateful to the Institute of Archaeology Awards for funding my expenses for conferences in the UK and abroad, and also for fieldwork. This support has enabled me to gain much experience and make valuable contacts.

Excavation

The training and research programme at Kafr Hassan Dawood has been funded by: UNESCO, The National Geographic Society, The Bioanthropology Foundation, The Supreme Council for Antiquities, Uppsala University, The Humanities Research Council of Canada, The Institute of Archaeology, University College London. My sincere thanks are also due to Mr M. S. El-Hanghouri (SCA) for the results of the previous excavations at Kafr Hassan Dawood (a copy of the KHD database is housed with the SCA), and to Mr Ahmed Saleh for establishing the KHD GIS. All photographs of KHD are shown courtesy of Prof. Fekri Hassan, and were taken by Prof. Fekri Hassan, Ms Bram Calcoen, and Mr Ken Walton.

I would also like to express my gratitude to Dr Ulrich Hartung of the Deutsches Archäologisches Institut Abteilung Kairo (DAIK) in Cairo, for inviting me to join the team at Buto/Tell Fara'in during the spring 2002 season.

Friends

A great many people have provided enormous support for me during the past four years, in various guises. I neither wish to, nor will I attempt, to place them in any ascending

order of importance – that task would be impossible, they have all been marvellous. Firstly Mr G J Tassie (aka Tass) has been an absolute rock; he always has time for discussion, has helped resolve numerous data queries for KHD, and has painstakingly scanned the photographs and plans from all of the KHD records. I have shared many interesting discussions, in various countries, with Mr Joris van Wetering on the topic of early Egypt. He has also most kindly lent me a number of volumes from his personal library. Dr Teri Tucker has been very generous with her time in discussions concerning bioanthropological methodology at KHD. I am also deeply indebted to the research students, past and present, of room B53, 'the basement' as it is affectionately known; this is a place with great camaraderie. I do not have the space to thank everyone individually, however, I wish to acknowledge the particular help and support of a few individuals: Mr Shin'ichi Nishiyama, Mr Reuben Grima, Dr Aaron Shugar and Mr Xander Veldhuijzen for help with numerous computer issues; Dr Michela Spataro and Ms Stavroula Golfamitsou for much positive energy and constant support; Ms Sophia Labadi 'ma petite', has always been of great help with French translation, and has kept me on my toes with my English grammar, her support has been very valuable to me. Thanks also to Mr Kevan Edinborough for words of encouragement and discussions on analysis; Ms Sarah McCarthy for her support and help with some tricky German translation (and to Xander again for this). I would also like thank Ms Elizabeth Bloxham for her unfailing support; our brief daily conversations over the past few months have been invaluable. Ms Serena Love, a great friend, has provided much support since I began back in 1999, and it is with great sadness that I see her leave for Stanford University, and I wish her the very best. I also wish to mention in particular Dr Okasha El-Daly, Mr Lawrence Stewart Owens, Ms Aloisia de Trafford, Ms Kathryn Piquette, Ms Cornelia Kleinitz and Dr Andrew Gardner.

A number of special friends deserve acknowledgement here: Ms Jan Picton has been a rock, I can honestly say that her support, and that of Ivor Pridden, has been phenomenal in so many ways, that I cannot even begin to list them here. Ms Fiona Handley, another rock, has had to put up with me at home as well as at college for a couple of years and she has seen me through some interesting moments. She has proof-read papers for me and is an oasis of calm, thank you Fifi. I am also very grateful to Ms Amanda Giles, who has provided constant support in and out of college over the years. Thanks also to my dear

friends in Bournemouth, Mrs Nicola Gray, and her husband, Calvin, for there encouragement, and to Dr Asra Siddiqui, for her solid support, and for putting a roof over my head! Almost finally, I also owe a debt of gratitude to Ms Jacqueline Pegg for actually volunteering for the onerous task of proof-reading this thesis, any errors that remain are my own responsibility.

I must not forget, of course, my comprehensive school history teacher, Mr Brian Fazackerly, of Corfe Hills Upper School in Dorset, who first introduced me to 'The Ancient Egyptians'.

Family

I have the luck of coming from a large and supportive family. I want to thank my mother, Audrey, for her encouragement, my sister, Jacky, for her words of wisdom, support and pride in me, and my brother Julian, and his partner, Ms Zimara Mahroof, for their constant encouragement and support. Without Julian's help the laptop on which I am fortunate enough to have written this thesis, would never have been sitting here, somewhat tired as it is now. I would also like to mention Jonathan, Jo, my godson Benjamin and his sister Abigail. Also, I would like to express my deep gratitude for the encouragement given by my dear Auntie Dorothy, and her late husband, Geoff. Finally, thanks to my late father, Roy, who may or may not know what I am doing now, but certainly gave me the drive to see it through.

Last, but by no means least, a special thank you to Mr Christian Perzlmeier, who has helped to make the final 18 months of my PhD research a very memorable time. Thank you for your support, your love, and that positive disposition. The quite literal flying visits and the wonderful invention of the telephone have meant so much to me as I have been finishing up, as they will continue to do. Vielen Danke.

Thesis Outline

Chapter 1 introduces the scope of this thesis, outlining my research aims and presenting the key sites that are subjected to analysis.

Chapter 2 reviews previous research into the origins of 'state' society in Egypt. The discussion follows a number of key themes in order to consider the growth of research in this area, and presents the types of theories that have been purported during the last century of research.

Chapter 3 examines research undertaken into the rise of complex societies in a variety of disciplines and geographical regions, having reviewed the state of research on the rise of complex society in Egypt in the previous chapter. This chapter consists of three main sections. In the first, I review the definitions and terminology within the realm of social evolutionary theory and discuss critical reviews of this approach. In the second, I explore approaches taken by researchers investigating the rise of complex societies through mortuary evidence. Finally, I discuss which approaches I choose to accept, reject or modify and the logic behind this.

Chapter 4 outlines my methodological approach in view of the discussion at the end of Chapter 3. Here I present the criteria into which the data can be separated and explain the reasons and methods behind each stage of analysis. A number of issues that affect data collection and use are discussed here: raw material terminology, bioanthropological methodology, and plundering of cemeteries.

Chapter 5 presents the results of a literature survey of sites throughout Egypt and into the Sudan, with the intention of clarifying temporal and geographic diversity in burial trends during the Predynastic and Early Dynastic. The results of this survey are synthesised through discussion of a number of hypotheses relating to expectations from the mortuary data. The discussion aims to help define the wider geographical situation during this period, the dynamics behind the development of the Upper and Lower Egyptian cultures, and the increase in interaction that culminates in a unified Egypt.

Chapter 6 presents the results of the statistical analysis. The analysis is broken down into four sections, each dealing with a specific statistical approach: 1) variation in distributions and relationships between the occurrence of artefact types; 2) variation in artefact type distribution and hierarchy of types; 3) frequency distribution of grave goods, grave types and bodily position; and 4) associations between effort, wealth and acquired or inherited status.

Chapter 7 deals with the results of the spatial analysis at Kafr Hassan Dawood, following the discussion of the statistical analysis for this cemetery in the previous chapter. The spatial analysis is intended to prove complementary to the statistics, and might give or take weight from certain arguments, that will, ultimately, provide a new perspective on the data, and allow further interpretations to be made on the dataset.

Chapter 8 gradually broadens the focus of the thesis once more to see how the results have affected the bigger picture. This concluding chapter therefore comprises five main sections: 1) a review of the intra- and inter-site observations of the key sites; 2) the changing roles of these sites within the region; 3) the sites in light of the discussion of wider Egyptian burial trends; 4) how the results of the analysis relate to previous perspectives on the Predynastic; and finally I comment upon the value of the methodology employed and possibilities for future research.

1 Introduction and Background to Delta sites

1.1 Introduction

> *Unfortunately the Delta is so deeply overlaid with deposits of Nile mud, that the material remains of its earliest civilization are buried forever from our reach*
>
> *James Henry Breasted 1905, 32*

That it has been possible to undertake this research on the Delta is testimony to the fact that James Henry Breasted's early remarks, thankfully, proved overly pessimistic. Breasted's (1905, 32; 1931) comments do, however, reflect his belief that the Delta was not an uninhabitable swampland in Predynastic times, a view that has persisted until relatively recently, despite research to the contrary from the 1930s onwards (Schott *et al* 1932; Passarge 1940). This research contributes to the increasing attention that has been given to the Delta within recent decades, and aims to elicit the changing role of four sites within the northeast of the region during the rise of complex society in Egypt at the close of the fourth millennium BC.

While a detailed review of previous research surrounding the rise of complex society in Egypt is found in Chapter 2, it is useful here to situate my research and illuminate the above comments by way of a brief summary. My temporal focus is between the Terminal Predynastic and the Early Dynastic period. This period coincides with the final stages of a process of cultural and political development and integration, from the beginning of the fourth millennium BC until the beginning of the third millennium BC. The majority of initial research into the Predynastic resulted in an abundance of theories giving elevated importance to the south in comparison to northern (Lower) Egypt. While the current state of research still suggests that the largest political units formed at an earlier date in Upper Egypt, excavations in the Delta have made it increasingly difficult to support theories purporting that an invasion of Lower Egypt by Upper Egypt culminated in the unified 'state'.

1.2 Research aims

My research is aimed at elucidating changes within social organisation and differentiation between the Terminal Predynastic and Early Dynastic period in the northeast Delta. While this region remains my focal area, an integral part of this thesis comprises the comparative investigation and discussion of the wider geographical and temporal context.

My overarching research questions are:

What evidence is there for change in social and political organisation as reflected through the mortuary evidence at the key sites in the northeast Delta, and how does this evidence relate to the funerary record throughout Predynastic and into Early Dynastic Egypt?

How does the evidence from the northeast Delta sites affect our consideration of previous hypotheses regarding the development of social complexity in early Egypt?

In order to approach these questions, I focus on what developments are detectable in social and political organisation through the cemeteries of Kafr Hassan Dawood, Kufur Nigm, Minshat Abu Omar and Tell Ibrahim Awad. I am considering the data on both an inter- and intra-site basis. I am therefore looking at: 1) the internal development of these four sites; 2) social development throughout the use of the sites; and 3) what type of social organisation was in place at the time when the sites went out of use. I intend to clarify the changes within the political or social environment that are causing the community to change the manner in which they bury their dead. It might be expected that the rise of complex society be accompanied by an increase either in inter-site contact, or between the individual sites and the centralised organisation. It is important, however, to assess whether the evidence suggests that some sites are more substantially affected by the centralised organisation than others, and the possible reasons for this.

The following issues are constituent aspects of my overarching research questions, and are of key importance in extrapolating details concerning the living society from the mortuary record:

- The reflection of social organisation/differentiation through burial: what aspects of the funerary record are most revealing about types of social organisation?
- The dynamics driving change within society: what events might cause imbalance in access to resources, lead to increasing competition, and instigate the necessity to represent these changes through burial?
- The types of social organisation reflected in the mortuary data: do these suggest egalitarian, ranked or stratified societies? What aspects of the funerary record may be informative in this regard?
- Diversity in modes of inhumation: how are these distributed over time and space and can they be revealing of societal or ideological development?
- Ideological uniformity: can this be equated with increasing emphasis on centralised organisation and decreasing importance of kin groups?
- Inequality in the cemetery: does this necessarily reflect increasing complexity within society?

1.3 Key sites

As a means of gaining an insight into developments within the northeast Delta, I have undertaken a systematic examination of four cemetery sites. This investigation aims to contribute specifically towards the understanding of the complex social transition from the Terminal Predynastic to the Early Dynastic period. It is during this period that there is increasing evidence for the Upper Egyptian (Naqada III) culture within Lower Egypt, in contrast to the earlier indigenous Lower Egyptian prehistoric culture (Maadi-Buto). By the end of this period the capital of Egypt is located in the north, at Memphis, and by this time Egypt is variably considered by scholars to be a state, a unified country, or at least 'centrally organised'.

Kafr Hassan Dawood (KHD), Kufur Nigm (KN), Minshat Abu Omar (MAO) and Tell Ibrahim Awad (TIA) (Figure 1.1) have been selected for a number of key reasons. Most

significantly, they offer comprehensive temporal cover for investigations into this period, although each site varies slightly in terms of periods of activity. KHD and MAO cover the core period from the Terminal Predynastic to the Early Dynastic (the earliest MAO burials date to the Late Predynastic), with the cemetery data from KN and TIA dating to the Early Dynastic period (Bakr 1988, 50, 1993; van den Brink 1992a, 50; Kroeper and Wildung 1994, xiv; Hassan 2000a, 37). The close proximity of the sites promises to prove interesting in view of the comparative nature of the analysis that I will be carrying out, since initial observations indicated considerable diversity between the cemeteries. The data from KHD and KN are, at present, largely unpublished, which presents me with the opportunity to combine this fresh evidence together with the published material from MAO and TIA. Of these four sites, the two most thoroughly excavated to date, in terms of mortuary contexts, are KHD and MAO. KN and TIA are partially excavated, with much of the excavation at the latter site focussed on later periods of activity; activity that is continuous from the Terminal Predynastic period until the middle of Dynasty XII (van den Brink 1988, 77; 1989, 78; 1992a, 45-54).

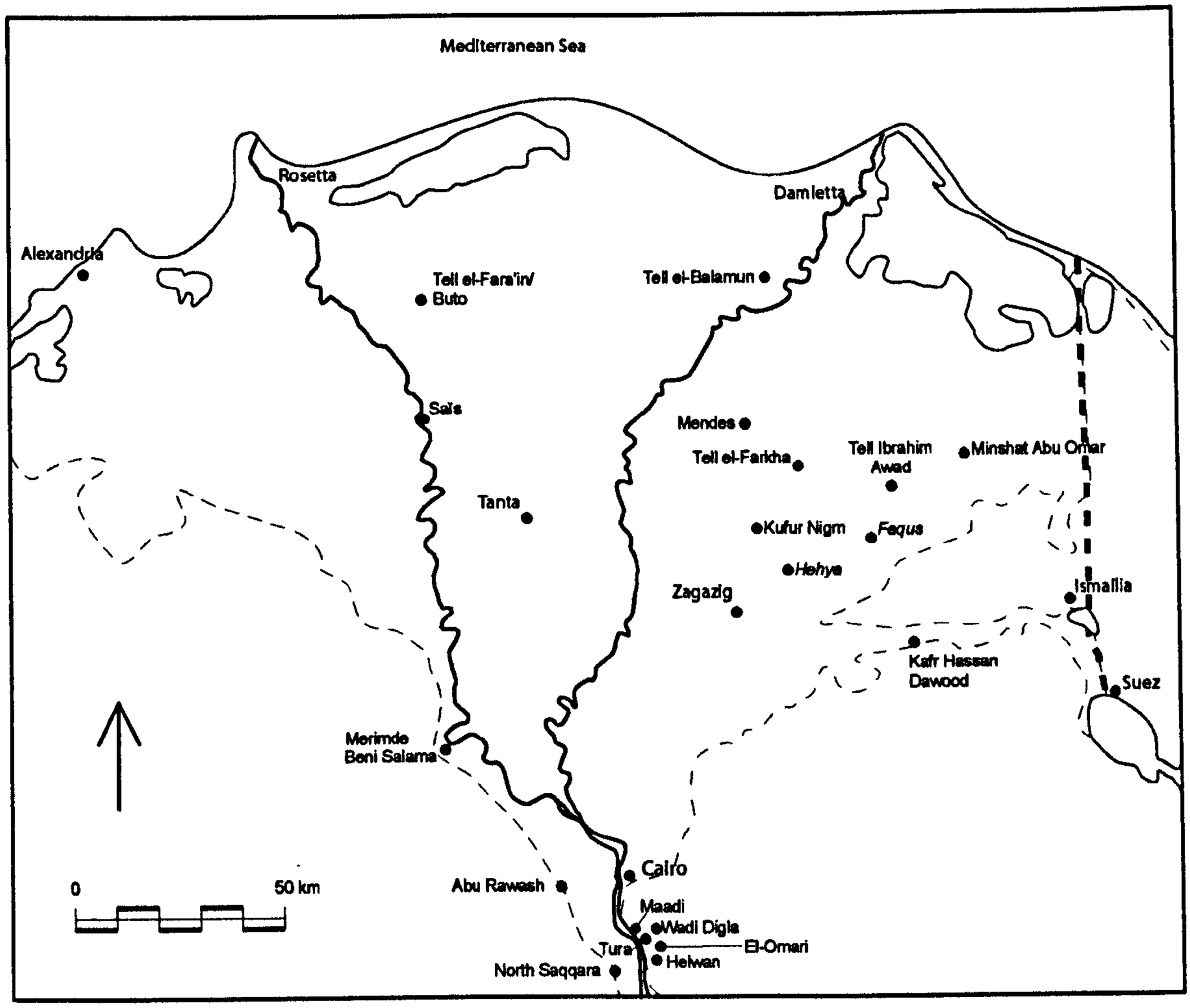


Figure 1.1: Map of the Delta showing the key sites (redrawn after Wilkinson 1996, 92, fig. 18)

Kafr Hassan Dawood

(30°30'59"N, 31°51'01"E)

KHD is positioned 8km east of El Tell el-Kebir and 40km west of Ismailia on the southern edge of the Wadi Tumilat. The cemetery, discovered in 1977, provides mortuary evidence from the Terminal Predynastic to the Early Dynastic period. The discovery of Late Predynastic-Early Dynastic potsherds by augering indicates the location of a contemporary settlement to the northeast of the cemetery. The cemetery site has been extensively excavated and 745 graves revealed in association with the early cemetery, in addition to a further 317 dating to the Late Period/Ptolemaic Period. During the later period of the site's history, the Wadi Tumilat is known to have been an important trade route (Redmount 1995, 135; Rowland and Hassan 2003, 423). It is also likely that the wadi served a similar purpose during the early settlement of the area.

The Terminal Predynastic to Early Dynastic graves mainly comprise simple oval pits, with few grave goods of limited variety, and a lesser number of rectangular and large rectangular mud-filled graves containing greater numbers of grave goods and a wider range of artefact types. The most common grave goods are ceramic vessels. Other types of artefact include stone vessels, most commonly of Egyptian alabaster, but also including limestone, siltstone, porphyry, red jasper, and diorite. The other finds from the cemetery include items of jewellery, flint knives and blades, cosmetic palettes, a variety of copper artefacts, and two items of gold.

The excavation of the site has been carried out by the Supreme Council of Antiquities (SCA) between 1989 and 1995, and continued by a joint mission between the SCA and an international team directed by Prof. Fekri Hassan from 1995 onwards. At least one further season of excavation is envisaged in order to explore the northern extent of the cemetery, which has been ascertained through test-pitting.

I have been a member of the joint SCA-UCL team at KHD since 1998 and am fortunate to have access to the unpublished records from Kafr Hassan Dawood, courtesy of Prof. Fekri Hassan.

Kufur Nigm (Ezbet el-Tell)

(30°45'47"N, 31°36'04"E)

KN lies 30km northeast of Zagazig, and 5km southwest of Kafr Saqr in the Ibrahimia Province, Sharqiya, near to the western bank of the Tanitic branch of the Nile (the modern Moas canal) (Bakr 1988, 49; 2003, 30). The site has been partially excavated and I am able to examine the evidence from 134 graves, 108 of which date to Dynasty I. The types of graves vary from jar burials and pottery coffins to mud-brick lined pits, with or without coffins and additional storage areas. The graves vary in their contents, with the most common grave goods being ceramic vessels. Other types of artefact in evidence include stone vessels of Egyptian alabaster and siltstone, cosmetic palettes, copper vessels, and beads (Bakr 1988, 50; 1993). There is a wide range in both the amount of grave goods and in the variety of types found in the different types of graves.

The site has been excavated under the control of the Egyptian Antiquities Organisation (now SCA) since 1960. In 1961-1962 and 1978, the Old Kingdom settlement, and possibly Early Dynastic settlement remains and a Terminal Predynastic-Early Dynastic cemetery were excavated (Krzyżaniak 1989, 277). The cemetery data have not to date been fully published. I have access to the records from the excavations that have been carried out from 1984 onwards by the University of Zagazig, under the direction of Prof. Mohamed Bakr (former director of the SCA), and the auspices of the SCA (courtesy of Prof. Fekri Hassan).

Minshat Abu Omar

(30°54.8'N, 32°1.5'E)

MAO is located on the eastern bank of the former Pelusiac branch of the Nile, 25km south of the outlet with Lake Mensaleh, 160km northeast of Cairo, in Markaz Husseiniya, Sharqiya province (Kroeper and Wildung 1994, XI). The site has been extensively excavated and a cemetery ranging in date from the Late Predynastic to the Early Dynastic has yielded 420 graves. Results of augering to the southeast of the cemetery suggest a settlement contemporary with the Late Predynastic to Early Dynastic cemetery, and a Neolithic settlement. The site was also occupied during the Graeco-Roman period and an

extensive cemetery dates to this period (Kroeper and Wildung 1994, xii; Kroeper 1996, 70).

The range in types of graves is wide, including jar burials, sandpit burials, pits that have remains of matting, mud-lined graves and mud-brick chambered graves (Kroeper and Wildung 1985, 25-37). The most widely found grave goods are ceramics, including a small percentage of Palestinian imported wares. Other types of object include stone vessels of Egyptian alabaster, siltstone, gabbro, breccia, serpentinite, greywacke, sandstone and limestone, cosmetic palettes, flint knives, a variety of copper objects, jewellery, amulets, and ivory pieces (Kroeper 1984, 6; 1985; 1987; 1988; 1992; 1996; Kroeper and Wildung 1985; 1994; 2000; Kroeper and Krzyżaniak 1992).

The Munich East-Delta Expedition excavated the cemetery at MAO between 1978 and 1990, under the directorship of Dr Hans Wolfgang Müller in the first year, and subsequently Dr Dietrich Wildung. The excavation reports are currently in publication, with the first two volumes of grave descriptions already available (Kroeper and Wildung 1994; 2000). There are also a number of other published articles on the site. My database for MAO has been compiled from the excavation publications and articles, since is has not been possible to gain direct access to the unpublished data.

Tell Ibrahim Awad

(30°46'N, 31°53'E)

TIA is located in the Sharqiya province, 14km north of Faqus. The site has been partially excavated and the Early Dynastic cemetery area is awaiting further excavation. The Early Dynastic cemetery has yielded only a few graves to date, and these are large rectangular mud-brick tombs, with single or multiple chambers (van den Brink 1992a, 50-51; van Haarlem 1998a, 18; 2000, 15). A large building, hearths and silos are associated with the Terminal Predynastic to Early Dynastic period, and both local and imported ceramics are found within this context (van den Brink 1992a, 50, 52). In addition, remains of small mud-brick houses have been found dating to the late Early Dynastic period (van den Brink 1992a, 50). The site has a continuous occupation from the final Late Chalcolithic period, right through to the middle of Dynasty XII, in cemetery, temple and settlement

contexts (van den Brink 1992a, 45). A series of temple structures have been superimposed on each other from the Protodynastic period until the Middle Kingdom (Eigner 2000, 17). There is a lack of mud-brick architecture in levels preceding the Early Dynastic (van den Brink 1988, 77; 1989, 78; van Haarlem 1998b, 509; 2000, 15). The types of grave goods include ceramic vessels, and also vessels of stone (amfibolite, basalt, diorite, Egyptian alabaster, quartz and siltstone) and copper, flint tools and shell objects (van den Brink 1988, 77-78; 1992a, 50; van Haarlem 1993, 37-40).

Excavations have been carried out since 1988, following identification of the site by the East Delta Survey of the University of Amsterdam, led by Dr Edwin van den Brink. The site was under the directorship of van den Brink until 1992, since when Drs Willem van Haarlem has been director. Spanish and Russian teams have also assisted in excavation at TIA under the directorship of van Haarlem. Several articles have been published on the site, the majority by Dr Edwin van den Brink and Drs Willem van Haarlem. The information within the TIA database has been compiled from the details of the graves that have been published within these articles.

Buto (Tell Fara'in)

(31°12'N, 30°45'E)

The site of Buto should be mentioned here in light of its importance in terms of the transition from the indigenous Lower Egyptian to Upper Egyptian culture. Buto is located in the northwest Delta, 15km east of the Rosetta branch of the Nile and 30km south of the present Mediterranean coast. The site has been widely excavated and settlement remains provide a stratigraphic sequence of the Lower Egyptian indigenous prehistoric cultural tradition and the gradual assimilation of the ceramic traditions of the Naqada culture (Upper Egyptian) from the late Naqada II period onwards (Köhler 1992; see Section 2.2 for chronology). To date, an early cemetery has not been located, although a pit burial containing an individual of 40-60 years was found in association with the lowest settlement level (von der Way, 1997, 74-75). The individual was only provided with an unpolished ceramic vessel (von der Way 1997, 74-75). As at TIA, mud-brick architecture is not in evidence in the earliest strata, and it occurs at Buto between the late Naqada II and subsequent stratum (Köhler 1992, 11). The stratigraphy at Buto

shows no break during the assimilation of the ceramic traditions of the Naqada culture. The Dynasty 0/I strata show a possibly religious building, with a more elaborate complex in place by Dynasty II/III (Köhler 1992, 11). The Old Kingdom stratum contains ceramic items that are 'typical forms of settlement pottery', including bread moulds and beer jars (Köhler 1992, 11). Copper has been found at the site, originating from southern Jordan, together with stone tools, which are said to have their origins in the Palestinian Chalcolithic. It is notable that in the earliest stratum there are ceramics that indicate Canaanite production at Buto (Faltings 2002, 166). The later strata at Buto date to the Saïte period, revealing a significant break in the occupation of this area (Köhler 1992, 11).

The Egypt Exploration Society excavated the site in the 1960s and the Deutsches Archäologisches Institut Abteilung Kairo (DAIK) has been involved in an ongoing programme of excavation since 1983, excavating Predynastic to Early Dynastic, and Saite and Roman material. Previous DAIK excavations have been directed by Dr Thomas von der Way and Dr Dina Faltings, and the current excavations are under the directorship of Dr Ulrich Hartung.

1.4 The application of the data to the questions

To approach this research problem I am drawing upon a social evolutionary framework in order to structure my observations and predictions concerning the development of social organisation. I am considering the difference between the categories of egalitarian, ranked and stratified society and how this might be expressed through the mortuary record. I do not intend to use the findings of my observations to fit the various types of society into strict categories (for example, Big Man Collectivity, Chiefdom, State), rather to use these terms as guidelines by which to help identify changes within social structure. Subsequently, I investigate which dynamics might have been causal in creating the social and ideological changes that affected how the living community disposed of its dead.

In order to observe and identify types of social organisation through the mortuary record the first step is to critically investigate the approaches that have been taken by other researchers who have applied mortuary data to the issue of the rise of 'complex' society.

I consider the approaches that have been attempted by researchers working with data from a wide variety of geographical regions in order to assess the range of possibilities that may or may not be appropriate for my dataset. I am also considering previous research that has been implemented on cemetery sites within Egypt during the Predynastic and Early Dynastic periods. Having considered which approaches might be valuable for my dataset, I present an analytical methodology that takes into account as many aspects of the mortuary data as is possible.

A literature survey of Egyptian Predynastic and Early Dynastic sites has been carried out with the intention of forming a series of expectations about the mortuary data. It is vital not to consider my dataset in isolation, and it is anticipated that the results of the survey will serve both to clarify aspects of social organisation that are apparent throughout Egypt and into the Sudan, and to situate my specific area of research within the wider geographical and temporal context. Deliberation over internal site development and comparisons/contrasts between other cemetery sites within the Delta and throughout Egypt may help elucidate the extent to which the Delta was socially and ideologically diverse from the Nile Valley from the Neolithic/Early Predynastic through to the Early Dynastic period.

Having completed the above research, the data analysis is then implemented. The data are stored in computerised files and subjected to a series of statistical tests. These tests are intended to scrutinise the data from different angles in order to draw out patterns that inform concerning the type of social organisation present, and the changes to social structure that are apparent on both an intra- and inter-site basis. My method of enquiry also takes into consideration the degree to which identities such as gender, age, and social position affect differentiation in terms of grave size, contents, and bodily treatment within the funerary ritual. At the conclusion of the analysis I aim to have clarified possible reasons for specific mortuary differentiation, considered why these might change in response to given circumstances, and present my interpretation of the dynamics that have been causal in burial differentiation. By this stage it is anticipated that a clearer picture will emerge as to how and why the social structure at these sites has been transformed, and whether and why the sites might show different types of social organisation.

In addition to statistical analysis, I have taken advantage of my access to the original excavation plans from KHD in order to explore development at this site from a spatial perspective. Due to the differential availability and quality of data from the key sites, it is unfortunately not possible to carry out this analytical stage on all sites of the dataset. I believe, however, that it is valuable to take this opportunity to ascertain what further patterns might be drawn out through using spatial analysis as complementary to statistical methods. The results should prove valuable in terms of establishing methodological approaches to future research.

2 Previous Perspectives on the Predynastic

2.1 Research into the origins of the Egyptian state

The purpose of this chapter is to synthesise concepts advanced during the past hundred years or so on the origins of state society in Egypt. I will highlight changing hypotheses from Petrie to scholars including Baumgartel, Engelbach, Kaiser, Emery, Hoffman, Adams, Hassan, Trigger, Kemp, Baines and more recently Hendrickx, van den Brink, von der Way, Wenke and Köhler. I will discuss conceptual developments and consider the causes for changes in direction. Finally, I will discuss the implications of these views for this research.

Research on the Predynastic can be broken down into discrete areas. Chronologies have been espoused concerning how to sequentially break up the Predynastic period, theories forwarded on the events that differentiated these phases, and hypotheses built about the directionality of civilising influence or the dynamics of internal development that led to the emergence of state society in Egypt. Therefore, I will largely address these previous hypotheses under the headings of 'chronology'; 'influences and dynamics' (including the environment, population pressure, incursions/influences from abroad); and 'events' (including theories pertaining to conflict between the north and south, trade, and interpretations of ceremonial objects).

2.2 Chronology

A number of different systems and terms have been proposed for dealing with the period preceding the Dynastic in Egypt (Mortenson 1991, 11-37). In 1895 Petrie was initially convinced that the Naqada culture, rather than being Predynastic, belonged in the First Intermediate Period (Petrie and Quibell 1896, 59-64; Baumgartel 1947, 25-26). However, Jacques de Morgan, working at Abydos and Naqada in 1896, excavated both Predynastic and Protodynastic graves that he immediately recognised as being prehistoric (Adams 1988, 68). Petrie (1920, 1) notes that at the time of the publication of *Naqada and Ballas* (Petrie and Quibell 1896) the subject under study was 'entirely new' and that any 'discrimination of periods' could not be attempted. In 1901, however, in *Diospolis Parva*, he sequenced the Predynastic, giving relative dates through his ceramic seriation,

and divided the Predynastic into the Amratian, Gerzean, and Semainean periods. Petrie's seriation is expressed through sequence dates (SD), which he began at SD30 to allow for earlier evidence being found at a later date. His SD numbering system ran originally from 30 to 76 (up to and including the Semainean), and then from 76 to 87 in his corpus of Protodynastic pottery (Petrie 1901; 1953; Hendrickx 1996, 36). Hendrickx (1996, 36, 37) notes, however, that SDs 83-86 are 'almost completely theoretical' due to a lack of Dynasty II material; he furthermore notes that the Predynastic and Protodynastic corpus SDs are somewhat incompatible since the former was based on the relative chronological occurrence of grave good types, with the latter 'defined' by typological differences. The Semainean was, and still, is not accepted as existing throughout Egypt, with evidence for the material culture only found at certain sites (Arkell and Ucko 1965, 154). Petrie (1920, 3) thought that the Predynastic Egyptian material was remarkable in its uniformity throughout much of the country, and temporally from the early Predynastic until the Protodynastic. The Predynastic was also thought to extend much further back in time than evidence suggests today. Petrie (1920, 5) calculated a starting date of around 10,000 BC, because of the higher proportion of prehistoric to historic burials at Diospolis Parva. He believed that the population during the earlier period must have been lower and hence such a high number of burials must have represented a longer period of time. He concluded that Dynasty I had begun at 5500 BC at the latest, and possibly as early as 8000 or 10,000 BC, it being unreasonable to put the start of Dynasty I at 3400 BC and 'crowd' the prehistoric into a few hundred years preceding this (Petrie 1920, 5). Petrie (1920, 6) also believed in the concept of an average cycle of civilisation, and placed the Egyptian cycle at 1300 years, which, allowing for two cycles within the prehistoric period, would start the dynastic period at 6000 BC, and the prehistoric at around 8000 BC.

Baumgartel published *The Cultures of Prehistoric Egypt* in London in 1947, nearly 30 years after Petrie's seminal volume. In response to further evidence having come to light, Baumgartel (1947, 2) noted the earliest prehistoric culture as being the Tasian and, additionally, did not believe that there was sufficient evidence for another cultural phase between Naqada II and Dynasty I (contra Kaiser 1985, 71-79; Holmes in Holmes and Friedman 1994, 107). Although she held with the division between Naqada I and II, she

believed that the former probably marked a longer phase than the latter, which encompassed greater increases in development, since 'wherever we can observe the phenomenon of a culture developing into one of the great ages of mankind, it takes an astonishingly short time to reach its culmination' (Baumgartel 1947, 2).

Petrie's SD system and division of the Prehistoric/Predynastic period has been critiqued and revised on many occasions to date. Two of the most critical revisions have been by Kaiser in the 1950s and by Hendrickx in the late 1980s and 1990s. Kaiser (1956; 1957) created the Naqada sequence I to III, and introduced eleven internal subdivisions, referred to as Kaiser's Stufen (steps/levels). The sequence was based on seriation from cemeteries 1400-1500 at Armant, but Kaiser (1990) also looked to the evidence from other cemetery sites. In 1990, he extended his Naqada III sequence into Dynasty I (Naqada IIIc1-3). The main revision to this sequence has been proposed by Hendrickx (1996). He re-organised the sequence in response to both an insufficient distinction in assemblages to support some breaks in the Stufen, and the creation of some divisions on hypothetical grounds, due to the non-representation of certain types of ware at Armant (Hendrickx 1996). Hendrickx (1996, 63) sticks to what he calls 'archaeologically clearly distinguished periods' to support his revisions. Of specific importance for this research are Hendrickx's (1996) adjustments to the Naqada III Stufen, creating a new start to the Naqada III sequence by relegating the start of Kaiser's Naqada III sequence (IIIa1) into his Naqada II (IID2) and creating a new IIIA1; he reorganises Kaiser's IIIb1-2 into his IIIB due to lack of distinction, and does not agree with Stufe IIIc1, which he believes to be an invalid attempt to define a transitional period. Hendrickx (1996, 59) bases his reorganisation of NIIIA2-IIID on the chronological evolution in Upper and northern Middle Egypt. For these reasons, especially the adjustments to Naqada III, I have decided to use Hendrickx's relative chronology. I have adapted his Table 9 in my Table 2.1 (below), to show the relationship between the relative chronologies, absolute chronology, and reigns of the early kings (Hendrickx 1996, 64).

An interesting debate centres around how the Badarian period fits into the Naqada sequencing; whether it effectively preceded, or was partially contemporary with the Naqada culture in Upper Egypt. It is suggested, and indeed the archaeological evidence

would appear favourable, that if the Badarian peoples geographically limited themselves to their 'heartland' between Matmar and Mostagedda in Middle Egypt, then while they still might have emerged earlier than the Naqada I phase (as C14 dates support), the two may well have run alongside, with some form of trade between the two explaining the presence of Badarian ceramic sherds in Naqada I contexts, and vice versa (Midant-Reynes 2000, 185-186). It is also notable that Holmes and Friedman (1994, 135) comment that the Badarian was 'largely contemporary' to Naqada I 'elsewhere in the Nile valley', suggesting that before c. 4000 BC we might refer to a 'pure' Badarian culture that subsequently developed into an 'evolved' Badarian or 'transitional Amratian' (Naqada I) culture. It is, perhaps, rather an inclination towards creating chronological divisions that may obscure overlapping, and in cases organic, developments over time. It was from a point much further north that the Naqada II culture expanded, with the Gerzean type site, el-Gerza opposite the entrance to the Fayum, and it also extended south, where contacts existed with what is called the Nubian A group (Midant-Reynes 2000, 187).

It is crucial to be aware of the problems associated with using a set terminology for both Upper and Lower Egypt, when we have the presence of the indigenous Lower Egyptian material culture of Maadi-Buto (Buto-Maadi) until the transitional phase to the Naqada culture of Upper Egypt through Naqada IIIA (Köhler 1992, 21). We are also faced with the terminological inconsistencies for the internal phases of the Predynastic: Early, Middle and Late (Tutundžic 1994, 606). The Predynastic sub-divisions can be broadly related to Petrie's division of the Predynastic into Amratian, Gerzean, and Semainean. The term Early Predynastic has been associated with the Amratian (although some scholars, as discussed above, would include the Badarian), Middle Predynastic with the first half of the Gerzean, and Late Predynastic with the second half of the Gerzean and up to Naqada III (Tutundžic 1994, 606-607). From the Naqada III phase (inclusive), the terms Semainean, Protodynastic, and Terminal Predynastic have been, and still are, variably used, for what describes roughly the same period (Hendrickx 1996, 36). It should be noted that the term Semainean is kept by some scholars as a reference term for the Naqada III period, but this was not the association originally intended for the term (Mortenson 1991, 17). There has been debate about the validity of the Semainean phase by various scholars. Kantor (1944, 110-136) disregarded the period on art-historical

grounds and Kemp (1982) tried to demonstrate that the Semainean was partially a 'subculture' of Dynasty I (Mortenson 1991, 16).

Table 2.1: Relationship between relative and absolute chronologies (after Hassan 1988; Hendrickx 1996; 1999a; Wilkinson 2000).

*Cal. BC	Petrie's Phases	Petrie's Sequence Dates	Period (Kaiser)	Period (Hendrickx)	Early Kings	**Delta Sites
c. 2900 →		75-82	-	NIIID	(Semerkhet)/Qa-a – Dyn II?	TF, MAO, TIA
c. 3000-2900		75-82	NIIIc3	NIIIC2	Den-Adjib	TF, MAO, KHD, TIA, KN
c. 3100-3000	Semainean (until 3050 Cal. BC)	63-76	NIIIc1-2	NIIIC1	Narmer - Djed – Dyn I	TF, MAO, KHD, TIA, KN
c. 3300-3100	Semainean	63-76	NIIIa2-IIIb2	NIIIA1-IIIB	Scorpion I - Iri-Hor/Ka - Dyn 0 (UE)***	TF, MAO, KHD, TIA(s)
c.3650-3300	Gerzean	38-62	NIIc-IIIa1	NIIC-IID2	-	TF, MAO, TIA(s)
c. 3900-3650	Amratian	31-37	NIa-IIb	NIA-IIB	-	TF

-* after Hendrickx (1996, 37; Hassan 1988, 138), these are the 'absolute chronological implications' brought about by the Sequence Dating system.
**Site Codes: KHD: Kafr Hassan Dawood
KN: Kufur Nigm
MAO: Minshat Abu Omar
TF: Buto/Tell Fara'in
TIA: Tell Ibrahim Awad. TIA(s): shrine/not cemetery
*** Upper Egypt

Radiocarbon dating has made a great contribution in terms of absolute dating within Egyptian chronology. However, up until now the dates predominantly arise from samples taken from Upper Egyptian sites. Hassan (1985; Hassan and Jiménez-Serrano unpublished) is amongst the key figures for the application of radiocarbon technology in Egypt, his 1985 work stating that while relative dating, such as the Sequence Dating system, is a 'pragmatic and useful tool, there is no substitute for a chronometric framework'. Hassan (1988) was also notably the first scholar to present a firm absolute chronology for the Predynastic. Hassan's more recent work with Jiménez-Serrano (unpublished), utilising radiocarbon dates for cemetery U at Umm el Qa-ab, has allowed, on comparison with previous radiocarbon dates, for reconstruction of chronological dates of the later Predynastic and Dynasty I (Boehmer *et al* 1993; Görsdorf *et al* 1998). The validity of absolute dating is not being questioned here, and Hassan (1985, 97) stresses its potential in terms of 'understanding the development of Egyptian civilization' and examining inter-regional developments, and connections between Nile Valley communities and earlier indigenous communities, or with those in surrounding regions. However, for the present research I have emphasised the relative chronology, it being the most useful for research being undertaken on Delta sites given the current lack of radiocarbon dates for this region (S. Hendrickx *pers comm.*; 1999a).

Clearly, many advances have been made in terms of chronological accuracy, both by re-structuring previous systems, and through radiocarbon technology. It is fair to say, however, that a great many problems remain for the future. Thought processes behind hypotheses postulated over the course of many years have certainly changed. Petrie, for example, considered matters from a rather diffusionist point of view, his system based largely on data from a few cemeteries; Hendrickx (1996, 37) notes that this obscured the consideration of regional differentiation, and Köhler (1996, 218) emphasises the degree of difference in terms of 'local traditions and styles' within the Naqada culture. Kaiser (1956; 1957; 1990) and Hendrickx's (1996) use and revision of the Naqada system are now both widely used, some preferring to use one or the other, and some scholars quoting relative dates in terms of both. Hendrickx (1996) however, basing his revisions on the evidence as he sees it, does not entertain the idea of looking for transitional phases where the evidence does not directly support them. This is an important development, since

with practicality most usually dictating that we employ an established system of dating, the introduction of any such 'transitional' features within the system must surely have a knock-on effect in terms of interpretation. In the discussion in Section 2.4.2, the tendency to look for transitional phases will be re-visited in terms of the 'transition' between the indigenous Maadi-Buto culture of Lower Egypt and the Naqada culture of Upper Egypt. Köhler (1995, 84) is key in terms of progress within Delta chronology, and in terms of discussion as to the nature of the 'transition' between the indigenous Delta and Upper Egyptian cultures. Her analysis of ceramics at Buto, and other Delta sites, has made clear that the assumed 'dramatic cultural distinction' is no longer appropriate, with a much more gradual evolution occurring in both the north and south, with a unification of material culture way in advance of political unification (Köhler 1995, 84; 1996, 219-220).

2.3 Influences and dynamics

In his outline of prehistoric development, Petrie (1920, 47) notes that at SD30 we see the people who had brought 'continuous civilisation' of Egypt and who were directly followed by a new 'civilised people', witnessed by new types of pottery and figure carvings. The variation shown in the prehistoric graves was attributed by Petrie (1920, 48) to social differentiation and illustrated to him that Egypt had made a 'political advance as a settled order of civilised connection over the country, by close and peaceful alliance of tribes, if not by united rule', both within Egypt and into Nubia. Petrie (1920, 48) also believed that another 'race' of peoples was living in the Nile Valley by this time because of the striking difference in their material culture. He notes major changes in the material culture again at SD54 and a collapse at SD63, the latter apparently in response to an increase in Elamite influence, following a clash in around SD60 (Petrie 1920, 49). The 'Elamite culture' was thought to have been located in southern and western Iran and endured from the Proto-Elamite phase (c. 3000-2500 BC) to the Middle Elamite Phase (c. 1500-1000 BC) (Roaf 1990). Derry (1956) provided cranial measurements to further bolster the hypothesis that the dynastic people were a different race who came into Egypt through an uncertain route at the end of the Predynastic period. Earlier, in the late 1930s, Hans Winkler had found rock carvings of boats in the Eastern Desert, the details of which suggested to him Mesopotamian water-going vessels, which acted as further support to the theory of an early invasion from outside of Egypt (Winkler 1938; 1939; Midant-

Reynes 2000, 231). On this matter Emery (1961, 39-40) further notes that, anatomically, there was such a great difference in these individuals that it was 'impossible' to suggest that they were 'derived from the earlier stock'.

Engelbach (1943, 197) also considered, as Petrie had done, that a race had been found who were in many respects 'larger than those of the earlier stock (whose skulls were abnormally small)...'. While he talks of an invading race, however, there is a change in thinking because he also considers the nature of these immigrants and whether there was a 'peaceful infiltration or ... a definite conquest' (Engelbach 1943, 198). As to the origin of these immigrants, he insinuates that Babylon is an option, his opinion being that Protodynastic art came from Babylon, but later he notes that the Babylonian writing system is too different from the Egyptian to allow Babylon to be the 'immediate home' of the invaders (Engelbach 1943, 207, 208). In this respect, he ultimately considered it wiser to consider the trade relationships with Syro-Palestine from the Middle Predynastic (Naqada IC, IIA-B) as the prime motive for population immigration (Engelbach 1943, 208; Adams and Ciałowicz 1997, 5).

Already, it is clear that thought processes were changing from the assumption that civilisation could not possibly spring from indigenous society without invasion to at least recognising that maybe a more gentle external push was key in the dynamics leading towards social complexity in Egypt. Indeed, one of the concepts Baumgartel (1947) considered is the indigenous nature of Egyptian culture, with the gradual development that would lead to state society. Badarian graves at Mostagedda (which were then assigned to the Tasian culture) were considered to be of 'a higher cultural level than the much later inhabitants of Merimda', with which they chronologically overlapped (Baumgartel 1947, 21). She acknowledged that the Badarian phase showed a differential attitude to funerary provision with spatially discrete burial areas and fine grave goods (Baumgartel 1947, 21, 23). Baumgartel's (1947, 24) view of the transition into the Naqada I culture, was of a probable mixture of local development and population infiltration from the south. During the Naqada I period, the lithic remains suggested the presence of skilled craftsmen and large-scale production, beyond local needs, that required a political 'order' to organise distribution (Baumgartel 1947, 28). Here we

witness another interesting change in thought - perhaps closer political unity was required to co-ordinate redistribution if it was to be large enough to allow for increasing production, and this in Naqada I.

An alternative hypothesis to infiltration from south to north, was the conquering of the south, by the north, a hypothesis supported by Sethe (1922; 1930) and Breasted (1931), one that Baumgartel (1947, 2) did not agree with (Adams and Ciałowicz 1997, 7-8). The hypothesis, based on the annals on the Palermo Stone (royal annals of Dynasty V listing kings in chronological order), suggested that the Delta was birthplace to the Naqada II culture, and that the inhabitants of the Delta had conquered the south (Breasted 1931; Adams and Ciałowicz 1997, 7). Breasted (1931, 712, 720, 724) believed that a 'series of kings of Lower Egypt', represented in the annals, were the first to rule the whole of Egypt; he also emphasises the 'more advanced civilization of the Delta'. Baumgartel (1947, 2), however, did not consider there to be evidence of a Delta culture even 'worth mentioning' earlier than the infiltration of the Naqada II culture of Upper Egypt.

Murray (1956, 94) remarked on the smooth transition from Badarian to Amratian (Naqada I), suggesting that the latter 'absorbed and altered' the former, but saw the transition to the Gerzean (Naqada II) in a very different light, probably gradually introduced and finally enforced through military invasion (foreign). Arkell and Ucko (1965, 153) record the consensus of opinion of Petrie and Baumgartel that the change from Naqada I to II 'is generally considered to reflect infiltration of a new people'. So, although Baumgartel had, nine years earlier, considered a more gradual development, Murray and others were keen to accept the invasion theory as responsible for the change between Naqada I and II. Still, Kaiser (1956, 109) did not feel that invasion was responsible for the Naqada II to III transition although he noted that many 'Veränderungen im sozial-wirschaftlichen Gefüge' ('socio-economic change') had accompanied the transition to the new capital in the north and the southern border moving to the second cataract (Arkell and Ucko 1965, 153, 154).

Even by the time of Emery's *Archaic Egypt* (1961), the possibility of foreign invasion seemed strong. It is true that while he emphasised the contact between Egypt and

Mesopotamia, there was a large question as to whether it was direct or indirect. He believed that even though evidence for conceptual development was stronger in Mesopotamia, the Egyptians had developed something 'superior'. Taking a slightly new tack, here, we see thought develop in terms of how long indigenous evolutionary processes might take in comparison with the rapid societal change that might accompany 'horde invasion' (Emery 1961, 38-39). Additionally, he still believed there was weight to Derry's and Petrie's argument for the presence of non-indigenous peoples in Upper Egypt (Petrie 1920, 48; Derry 1956; Emery 1961, 39-40). In 1991, Wenke (1991, 293), contra to Petrie (1920), Derry (1956) and Emery (1961), looks at evolution in terms of the archaeological evidence, and notes that the lack of skeletal evidence for the Egyptian Neolithic seriously restricts us in making observations concerning relative similarity.

Arkell and Ucko (1965, 155-156) note that knowledge of social, political and religious organisation during the Gerzean period (Naqada II) remains sparse. They do, however, recognise the possible evidence for 'nobility', citing examples including the elite cemetery at Naqada and Tomb 100 at Hierakonpolis; they also consider that 'nobility' may have existed as early as the Amratian period (Naqada I). However, looking at the actual evidence, they simply do not consider that it is sufficient to support invasion theories (Arkell and Ucko 1965, 155-156). We witness here another departure from automatic assumptions that the rise to state society could only be achieved through incursion by foreign peoples, to one favouring indigenous social development (Arkell and Ucko 1965, 155-156).

A dramatic shift in models for the evolution of social complexity in Egypt during the 1970s reflects the thoughts of the Processual school of archaeology, with the environment and demographic variation becoming key issues. Carneiro (1970) based his model for the origin of the state on environmental circumscription and increasing population pressure. He was of the opinion that increasing aridity in the eastern and western deserts in the second half of the fifth millennium BC led to an increase in population density in the Nile Valley during the fourth millennium BC. This, he categorises as a period of rapid political evolution during which the state formation process began (Bard and Carneiro 1989, 18, 22). He noted that while some of the larger Upper Egyptian sites were

important trading nodes with privileged access to resources and manufacture, sites within environments such as Nubia and the Delta were thought to have no economic base through which to achieve a higher level of 'socio-political complexity' (Bard and Carneiro 1989, 19-22). This would now be strongly refuted, in view of the growth of research in the Delta, so Carneiro very much reflects the time in which he was writing. His 1972 work, a cross-cultural chapter, suggests that war is at the 'root' of every state emergence; groups form into confederacies to deal with a specific problem (Carneiro 1972, 65).

Hassan's (1981) *Demographic Archaeology* contests the hypotheses of Carneiro (1970; 1972), both in terms of population pressure, and military conflict (in conjunction with population pressure) being valid dynamics for the rise of state society. He proposes an alternative model based on carrying capacities, and notes that while communities may be able to withstand certain crises through their 'anticipatory sensors', that the 'adverse impact' of more violent events may result in an increased workload, insufficient food and social conflict, potentially resulting in institutionalisation if adverse conditions persist (Hassan 1981, 175). Hassan (1981, 251) also hypothesises on the outcome of negative ecological change on agricultural communities, resulting in the need for storage facilities, redistribution and 'interregional integration of resources', and how we might see these 'cumulative changes' steering towards civilisation, as opposed to any single dynamic. That military conflict triggered state formation, as suggested by Carneiro (1972), is unlikely in Hassan's (1981, 255) opinion, since he considers that on the one hand the military conflict might have no relation to population pressure, and on the other hand, that 'Large-scale, systematic, and organized warfare' would surely have been carried out by those needing to extend their power, rather than a community with barely enough resources for sustenance. The cumulative causal approach appears to present a more realistic model with which to approach the archaeological evidence, taking into account both the variety of potential reactions by a community to adverse conditions, and the subsequent propensity for these reactions to result in permanent societal change.

Butzer (1976, 101-102) also critiques Carneiro's theory of population pressure, contesting how it could be applied to the Nile Valley given the fact that Upper Egyptian

communities had plenty of opportunity for northwards expansion. He notes that this, together with colonisation, 'would be logical'; in the Memphite region, there was opportunity both for northwards expansion, or southwards 'to an ultimate confrontation with Upper Egypt' (Butzer 1976, 102). He ultimately notes that it was long after the 'political unification' before the Delta can be described as 'filling out', hence refuting Carneiro's theory (Butzer 1976, 102). Butzer (1976, xiv) takes what he describes as an 'explicitly ecological' approach in his attempts to research the emergence of Nile Valley civilisation, a civilisation that he states was 'ultimately based on irrigation farming'. He does not believe that the Egyptian hunter-gatherer communities adopted agriculture as early as they might have (and indeed two millennia later than the Saharan hill communities), since the success of their lifestyle did not provide the impetus to make such a fundamental change to their subsistence existence (Butzer 1976, 8-9; 2002, 95). This is a very important consideration, since Butzer (1976, 8-9) is addressing the problem in terms of specific regions, as opposed to scholars such as Wittfogel (1957) who assumed that since large-scale irrigation required state organisation in some regions, it would then automatically follow in others. He also cites the Delta as being the battleground for the 'semimythical wars of unification' described by Kaiser (1964), and notes that the oldest ten of the 20 nomes of Lower Egypt predate Dynasty III and were 'significantly situated' between Delta distributaries (Butzer 1976, 93-94). He also commented that they continued to persist after the governmental centralisation; he considers that these nomes may have evolved from 'natural basin-irrigation units' (Butzer 1976, 93-94, 103). A note should be made here regarding the origins of these political or administrative units, for which the term 'nome' was actually only attested from Graeco-Roman times onwards (Pardey 2001, 17). Inscriptions from the Dynasty III complex of King Djoser provides us with the names of administrators of the tenth Upper Egyptian nome, although it is possible that there was a long period of development prior to this (Pardey 2001, 17). It is believed that these units were originally created to facilitate governance of regional administrative matters, such as tax collection (Wilkinson 1999, 141; Pardey 2001, 17). It is debatable whether these units appeared first in the north or the south, but Wilkinson (1999, 141-142) does point out that with the creation of the capital in the north (Memphis), a tighter control mechanism may have been required over the distant southern regions; there is also the possibility that the nome sign depicting an

'area of irrigated land' may relate to the Delta. Furthermore, if the Delta 'lacked any well-defined, pre-existing political structures' then it might have been better suited for the implementation of a new administrative system (Wilkinson 1999, 141-142). To return to our discussion of influences for change, Butzer (1976, 10-12) also considers that influence was coming both from Asia, in terms of agriculture, and from Africa, in terms of stone tool technology. He views irrigation in much the same manner, in so far as he notes that when the annual Nile floods were 'persistently good, the density of Predynastic population was probably insufficient to warrant artificial irrigation' (Butzer 1976, 20; cf. Aztler 1995, 45). In fact, it was at the end of Dynasty I/start of Dynasty II (c. 3000-2800 BC) that the Nile floods decline significantly, marking the end of what Butzer (1976, 28, 39) calls the Predynastic 'moist interval', and possibly are causal in the abandonment of some Late Predynastic settlements in the region of Hierakonpolis, Armant, Naqada South Town, Abydos and Mahasna. On archaeological evidence, including drill cores taken in the Delta, Butzer dismisses claims of the inhospitable nature of the Delta, citing also the evidence of early cult centres existing there (Butzer in 'Comments' to Arkell and Ucko 1965, 157-158; 1976, 93). Indeed, he notes that back in the 1940s arguments were already being raised in opposition to the view of the uninhabitable nature of the Delta, and that these were largely based on ethnographic analogies, such as the Middle Niger Delta (Passarge 1940; Butzer 2002, 83). Whilst irrigation may, in his terms, have been closely tied to the rise of complex state society, he does not hold that this can be proven for Egypt; furthermore the lack of 'written regulations' pertaining to water legislation from Dynastic Egypt implies that matters concerning water were probably controlled on a local basis throughout Egyptian prehistory and history (Butzer 1976, 109). Hassan (1997b, 478) is in agreement that we do not have the evidence to suggest that a prime mover in state formation was the necessity 'to oversee major irrigation works'. Contra this, Atzler (1995, 48) comments that the recording of Nile Flood levels on the Palermo Stone suggests that 'at least during times of a functioning central administration this data must have been of prime importance' (Adams and Ciałowicz 1997, 7; cf. Hassan 1997b, 477). However, Goedicke (1994, 191) notes in discussion of the work of Schenkel (1978) that it is not known for inscriptions from the Old Kingdom to mention royal irrigation projects, and he considers that matters pertaining to water supply were under the control of local administrators, not subject to central organisation.

The conclusions drawn from Butzer's (1976, 111) arguments are largely based on his belief that investigating the crucial relationship between humans and the environment of the Egyptian floodplain 'militates against the fashionable trend to view the origins of civilisation and of urbanism solely in sociological and political terms'. Hoffman (1980a, 141) was also concerned with the effect of climatic change as a 'major factor in the genesis and initial expansion of Predynastic culture in Upper Egypt'. The evidence pointed to the Badarian being the earliest farming and herding society in the Nile Valley, but Hoffman (1980a, 143) admitted that it was impossible to conclude whether the Badarian was a development of indigenous culture, or whether it was totally alien to the Nile Valley. He commented that whatever else we infer from it, the situation was that the Predynastic people were scattered and 'exploiting a variety of ecological niches with a variety of different subsistence techniques and modes of social organization' (Hoffman 1980a, 163). A key issue in his research is that rather than re-stating the superiority of Upper Egypt over Lower Egypt, he actually saw the Upper and Lower Egyptians as having different agendas (Hoffman 1980a, 195, 200). Settlement evidence from el-Omari in Lower Egypt suggests an 'egalitarian way of life' in contrast to that of their 'more political and status-oriented neighbors to the south' (Hoffman 1980a, 195, 200). He followed Boserup's (1965, 11) line of thought that population growth (c. 3300-3100 BC) may have unbalanced the Egyptian system and contributed to the rise of the state; but he also felt that the increasingly arid climate fuelled the desire for the southerners to move north, and that the development of irrigation led to increased social stratification (Hoffman 1980a, 305-310, 312-316). This was also felt by Fattovich (1979, 219), who believed that the dynamic sparking 'class stratification' in Naqada I was the necessity of regulating 'some common activities', for example, irrigation.

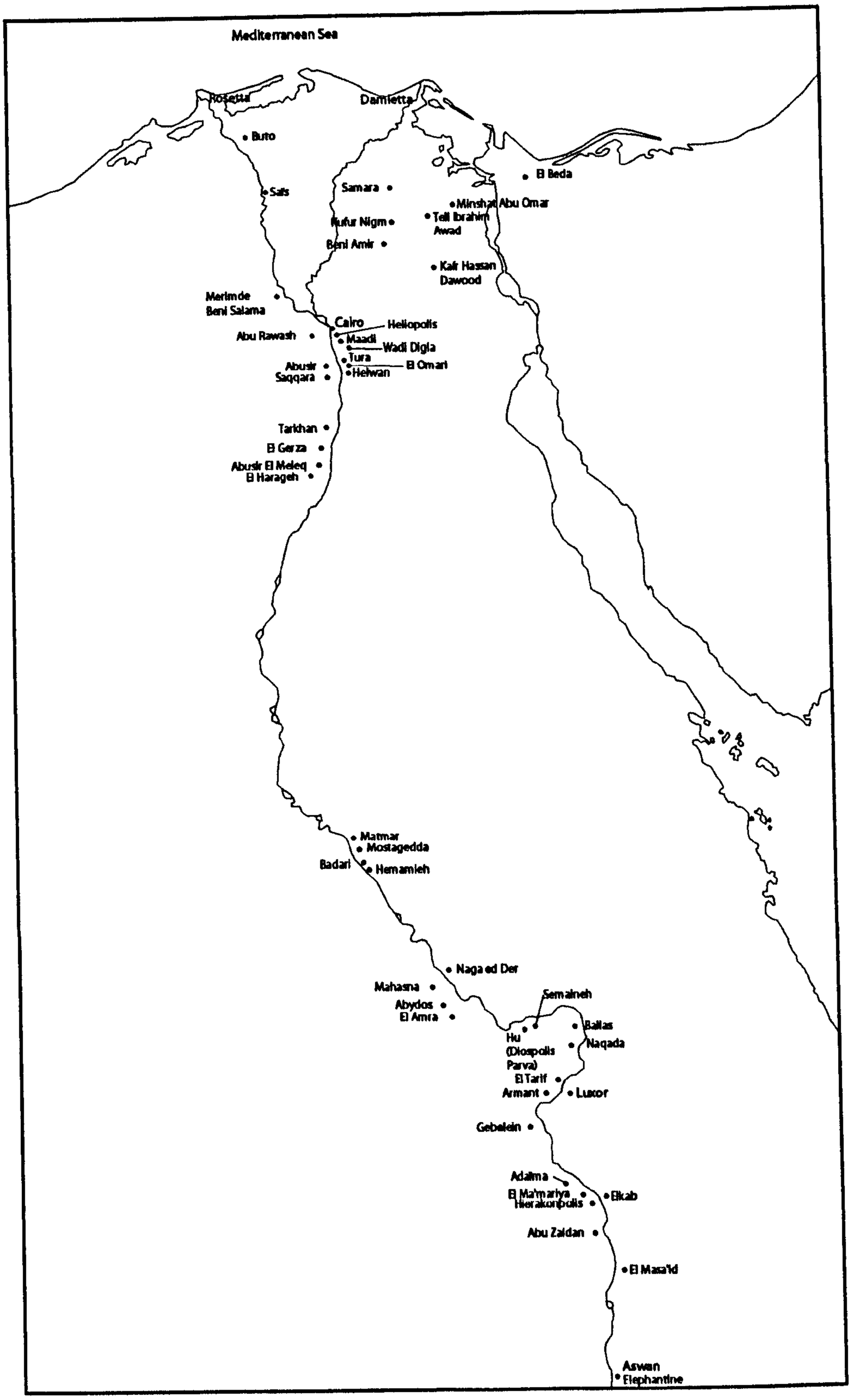


Figure 2.1: Map of Egypt (redrawn after Mortenson 1991, 20-24, figs. 2-4)

Hoffman (1980a, 164, 195, 209, 299) considered Upper Egypt as a more integrated area, concerned with the acquisition and display of wealth with which to legitimise status, the accumulation of herds for 'capital wealth', and a region well aware of the economic potential of connections with the Sahara and the Red Sea. Lower Egypt, on the other hand, comprising a series of politically independent units, was concerned with ploughing resources back into the economy (Hoffman 1980a, 164, 195, 209, 299).

In illustration of this we might look to the indigenous Lower Egyptian settlement site of Maadi, a trading community (Hoffman 1980a, 207; Caneva *et al* 1987, 105; 1989, 292). At Maadi, despite the community's involvement in metallurgy (Caneva *et al* 1987, 107; Hoffman (1980a, 207) notes that there was no trace of copper within the mortuary record, suggesting that resources were being kept within the living community. The different priorities of north and south are clear, with the Lower Egyptians not overtly displaying concern vis-à-vis the acquisition and utilisation of goods for self-promotion (in terms of mortuary evidence), and, the Upper Egyptians, quite contrarily, being increasingly concerned with ways in which to legitimise their position in an ever competitive society. Trigger (1983, 69; 1987, 61), in fact, sees the increasing amount of prestige goods entering the funerary context in Upper Egypt, and the impulse for more production possibly leading Upper Egyptian traders to Lower Egypt to gain access to the traded goods. For Upper Egyptians, of course, the acquisition of some of these materials was seen in terms of status, because of the rarity of these materials and objects in their homeland, and in terms of the sheer distance from which the materials had to be brought. Hoffman (1989, 51) remarks that in the Naqada I period, the regional chiefs of Upper Egypt probably 'manipulated the production of holy objects and [even] "packaged" mortuary kits at their regional capitals to enhance their own wealth and prestige', and that during the subsequent phase there were even trading centres specifically for the production of funerary objects. Guksch (1992, 9) considers the importance of long distance trade and its expansion, following the 'decline' of Maadi and the increase in Naqada material culture in Lower Egypt, into the northeastern Delta and then into north Sinai and Canaan. He also notes the infiltration of the Naqada culture into Buto, which might have been involved in Near Eastern trade by sea (Guksch 1992, 9). He suggests that this trade was controlled by the 'rulers' of Hierakonpolis, Naqada and This, allowing

them access to both goods and motifs from the Near East, which he believes, along with many others including Hoffman (1989, 51), were for 'conspicuous consumption' (Guksch 1992, 9; cf. Smith 1992; Wilkinson 2000).

Hoffman (1980a, 207) felt that metallurgy must be inextricably linked to trade, the technology for smelting having been transmitted from outside Egypt. He notes, however, that despite the importance of copper at Maadi, such items did not accompany the deceased into the graves (Hoffman 1980a, 299). According to Hoffman (1989, 51) the demand for more grave goods, and rarer ones, 'stimulated both internal, Nilotic trade and external trade with Palestine, Nubia and the Red Sea region'; indeed he added that competition for such rarer resources caused warfare and 'the expansion of a few kingdoms'.

More recently, with the broadening of archaeological agendas, multivariate models have gained popularity. Hassan (1988, 156-157; 1997a, 53), a key proponent of looking at multiple causes, in searching for the specific dynamics behind Egyptian state formation is adamant that by the Late Predynastic irrigation was not 'complex' enough to need coordination by a central organisation, and was not a 'major factor' in the rise of state society (contra Wittfogel 1957; Baumgartel 1947, 46; 1974, 482-483; cf. Pérez Largacha 1995, 83). Instead, he attempts to move away from the checklist/typology of civilisation and concentrate on more varied aspects of the manipulation of power. This is very important, since attempts to fit social development into neat stages, without allowing for inter-regional variations can have extremely detrimental side-effects. Hassan (1988, 165) considered Predynastic social developments to be integrated with agriculture, with *local* chiefs emerging in response to a central pool of resources, and increased hierarchy accompanying the growth of the economy. Rather than Egyptian civilisation being dependent upon a riverine environment, it was dependent upon 'cultural-historical circumstances', and change was initiated through human decision, the interaction and choice between the individual or group and the environment (Hassan 1997a, 52, 53). The increase in the size of political units and the lessening of Nile floods is described as being 'a catalyst' in the unification of Upper Egypt, which came to extend its control over the north in a bid to claim the trade routes and grain supplies (Hassan 1988, 165-166; Hassan

2000b, 135). Hassan (1988, 172) constructs a 'hierarchy of chiefs', from village to district to regional chiefs, legitimising their status through 'Imported and specialized' material wealth, as Hoffman (1982a, 130) had also discussed earlier. Hassan (1988, 173-174) discusses Wildung's (1984, 269) conclusions that the unification was not a single event of military conquest and notes the possibility of 'interregional integration through alliances and warfare' leading to unification. Hassan (1988, 185) remarks that from the Late Predynastic onwards the power play within 'a hierarchical organizational pyramid' may be paramount to the 'structuring of social relations and economic pursuits'.

The increase in aridity (3300-3200BC, 4500BP) in the eastern Sahara and the Sinai may have resulted in an invasion from the Sahara and Asia to Egypt, leading to a confrontation with Egyptian chiefs (Hassan 1988, 174). Notably, contra to a number of other scholars, although in agreement with Butzer (1976; 2002), Hassan (1997a, 64, 65) believes that the Delta floodplain was hospitable to farming and pastoralism by around 8000 BC, with farming and herding arising due to the movement of peoples across the Sinai from the Levant. Domestication and cultivation in the Delta is in evidence from 4900 cal BC at Merimde Beni Salama (on the western edge of the Delta), with cereal cultivation spreading to Upper Egypt by 4400 cal BC (Hassan 2002a, 13, 16). Wenke (1991, 292-296), agrees that the Delta environment would have been no 'barrier to substantial settlement there throughout the Holocene', and in the period after 3400 BC notes the expanding population and economy in Lower Egypt, following the increase in settlement density and cultural change which had occurred in Upper Egypt between 4000-3700 BC.

Kemp (1989, 31) considers the importance of territorial rights and identity that become significant once individuals have strong affiliations with land. This is key when we look to kinship links and association with ancestors as a means of proving legitimacy to others in terms of territorial extent (Kemp 1989, 31; see Chapter 3). He considers that this identity, coupled with ambition, provided the impetus for competition to obtain additional agricultural surplus through coercion or purchase, and for an environment supportive of the change from 'leaderless aggregations' to a few leaders controlling the populace (Kemp 1989, 32).

Spencer (1993) believes that the 'attitudes' of Upper Egypt were responsible for shaping the 'thinking' of Dynastic Egypt, and notes that from as early as the Badarian period, in the Nile Valley, the south shows more 'technological superiority and attention to quality and aesthetic considerations' than the early Delta (Spencer 1993, 24; cf. Hoffman 1980a, 195, 200). To some degree, Spencer (1993, 33) attributes the sudden burst of innovation he associates with the Naqada II culture to a gradual infiltration of peoples bringing 'outside influences and new ideas'. Holmes (1989, 322), however, states that the lithic assemblages in the Naqada region, between Naqada I and II, can be seen as 'belonging to a single industry', thus showing that innovation is certainly not universal at the start of Naqada II. Spencer (1993, 34-39) notes the submergence of the indigenous Delta culture by the Naqada culture by late Naqada II, in terms of architecture, tomb development, and ceramics, but no political takeover. Despite the expansion of the Naqada culture, the communities of Lower Egypt maintained their indigenous character until the 'unification', which he places at the close of Naqada III (Spencer 1993, 47).

Comparing contemporary developments in Upper and Lower Egypt, Wenke (1991, 300, 304-306) discusses the evidence from Maadi in terms of 'functional changes' in the ceramics, evidence of craft specialisation in metallurgy, lithics, stone vessel production and pottery manufacture, all of which also reflect the expansion of Delta sites in terms of contacts with Palestine (Caneva *et al* 1989, 291). At the same time he notes that Hierakonpolis and Naqada in Upper Egypt are in fact shrinking in size (Wenke 1991, 304-306). The large number and types of stone vessels in the Delta, and the 'stylistic homogeneity' are also suggestive of 'substantial' settlements within the Delta (Wenke 1991, 308). He suggests that the appearance of mass-produced ceramic forms throughout Egypt represent 'a prime indicator of increasing complexity' in institutions, in terms of administration and craft production control (Wenke 1991, 307).

Inferences have been made concerning the association of large-scale brewing with increasingly complex social organisation (Geller 1992, 22; cf. Baumgartel 1974, 482-483; Fattovich 1979, 217-219). Geller (1992, 23, 24) stresses the potential for interpreting remains of specialist brewing areas (found at most Predynastic settlement sites) as evidence of 'directed production' and redistribution by 'powerful individuals or

institutions'. At Hierakonpolis, Friedman (1996, 346) notes that by the start of Naqada II there is pretty clear evidence for craft specialisation and redistribution; a beer industry is attested through discovery of brewing vats and a ceramics area, replete with kiln, for the manufacture of the beer jars (Friedman 1996, 346). Interpretations have also been made concerning changes to food technology during the Naqada IIIC2 period (Hendrickx *et al* 2002, 298). Hendrickx *et al* (2002, 298) remark upon the 'rather sudden appearance' of beer jars 'well suited for transport', together with an increasing amount of bread moulds, which suggest a rise in the number of individuals associated with specialist activities. The changes to the vessels, and the use of airtight sealing of beer jars, are inferred as improvements within production (Hendrickx *et al* 2002, 298). Within the broader discussion, they also comment upon 'evolution toward more sophistication' within the Naqada III period, as suggested by 'importance of wine in the elite way of living' (Hendrickx *et* al 2002, 298; cf. McGovern *et al* 1997; Joffe 1998, 302). It is notable that while wine jars have been more frequently found at cemetery sites in the Delta, this is not the case in Upper Egypt where they are largely restricted to Abydos (Hendrickx *et al* 2002, 298; cf. Joffe 1998, 301; Porat and Goren 2001, 466). It is interesting that Hendrickx *et al* (2002, 298) note that although we cannot be certain whether these changes in technology actually began at the elite centres or not, they may certainly be interpreted as 'consequences of state development and elite behaviour' (cf. Joffe 1998, 299), as opposed to technological changes having been bound up with the dynamics for state formation.

2.4 Events

2.4.1 Ceremonial objects

Conflict, a decisive victory of Upper Egypt over Lower Egypt; that is how a series of 'ceremonial' items (including cosmetic palettes and maceheads) have been interpreted by a number of scholars, at various times of writing. The ceremonial palette most often theorised about over the years is that of King Narmer (Figure 2.2). The depictions on this object have been interpreted as depicting a military conquest by Narmer, possibly of Lower Egypt by Upper Egypt, with Narmer depicted on one side of the palette wearing the red crown of the north and on the other, the white crown of the south. What is also noted is that although we have depictions of both the red and white crowns, on opposing sides of the Narmer palette, we do not know to date when these crowns actually become distinct symbols for Lower and Upper Egypt, respectively (Spencer 1993, 56).

Baines (1995, 95-96, Fig 3.1) points to an early depiction of the red crown of Lower Egypt on a jar fragment dating to the Naqada I period, from the site of Naqada in Upper Egypt. He is not claiming that in this early context the depiction was intended as royal insignia for the Delta, rather that it was 'probably the formal ancestor of the crown' (Petrie and Quibell 1896, pl. LII no. 75; Baines 1995, 96). This fragment is also discussed by Kaiser (1961, 39 note 1) who considered the possibility that it could represent the crown of the goddess Neith, and earlier by Wainwright (1923) who thought it to be either: a) a crown worn by the kings of Saïs; b) a cult sign for the goddess Neith; or c) a relic of 'a prehistoric and long-forgotten people of Libyan origin' who had been inhabitants of both the west Delta and Nile Valley. A theory of Kaiser's (Kaiser and Dreyer 1982, 261-269) is re-stated by Baines (1995, 98) as there having been between ten to 12 kings ruling throughout Egypt from the 'proto-kingship' of Hierakonpolis up until just before the Early Dynastic period, possibly being some 2-300 years. The earlier depiction of the crown is, according to Baines (1995, 98), unlikely to relate to kingship since this is 'not characteristic of largely unstratified societies like Naqada I', even though developments in this direction may be emerging.

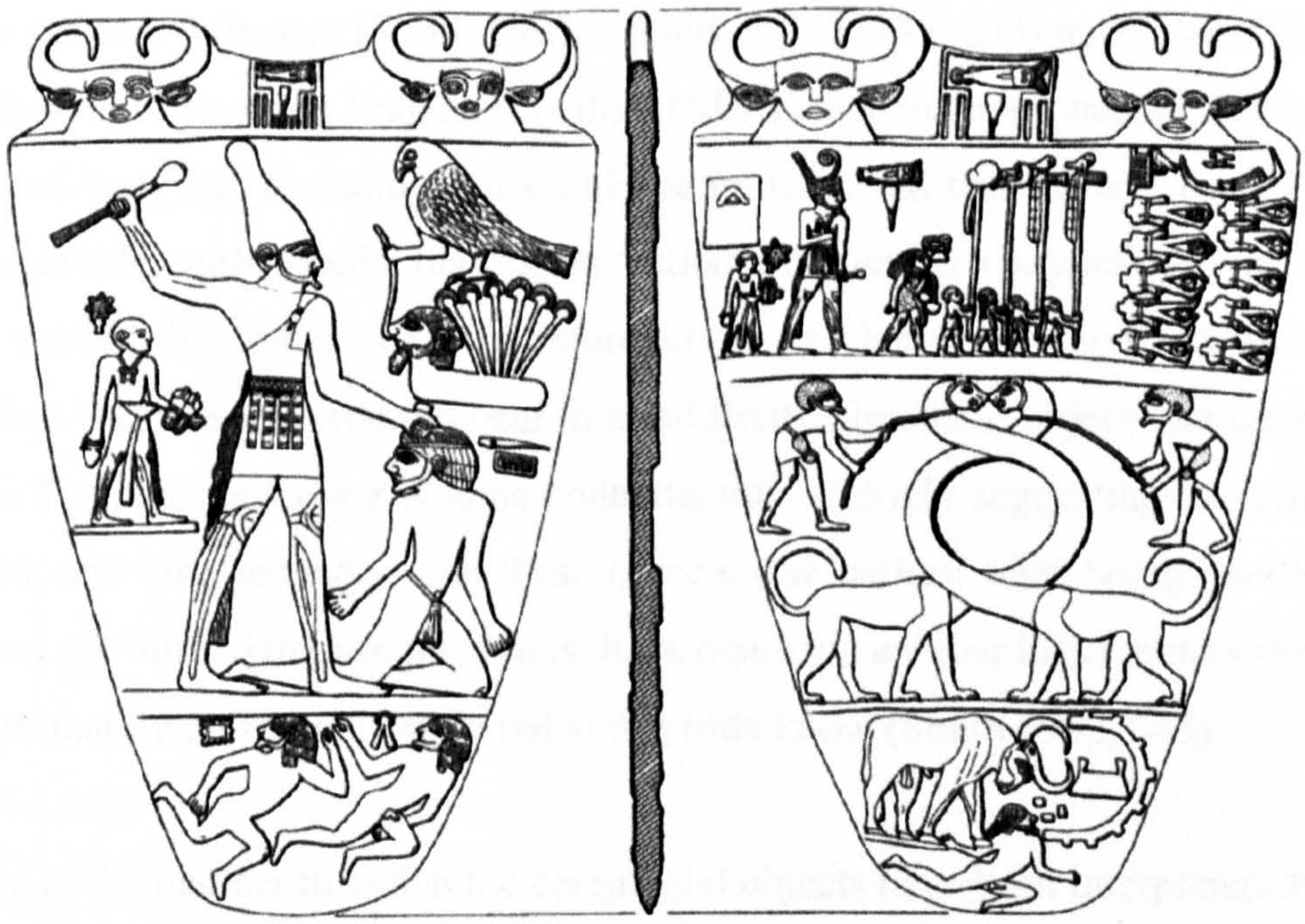


Figure 2.2: The Narmer palette (after Kemp 1989, 42 Fig. 12)

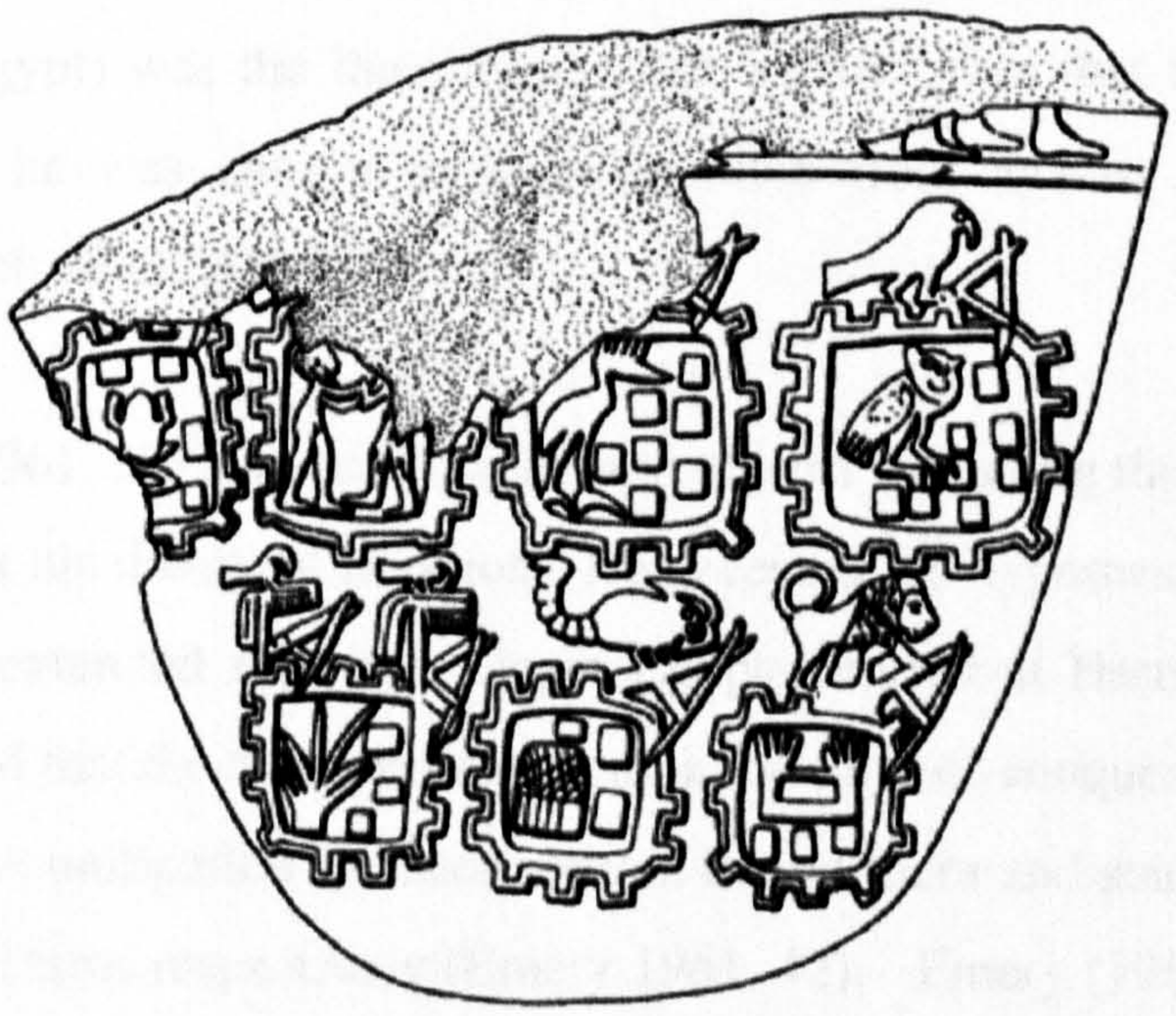


Figure 2.3: The Libyan Palette (after Kemp 1989, 50 Fig. 16)

It is also important to briefly mention here that some of the motifs on Egyptian objects have been taken at various times to be indicative of Mesopotamian presence or indeed direct or indirect influence (Smith 1992). Smith (1992, 235, 245) notes (specifically with regard the period between Naqada IId-IIIb/IID-IIIB) that when arguments are being made in terms of 'kingship mythology' it should be remembered that the motifs seen in Egypt are comparable with motifs that rather reflect 'divine-hero mythology' in Susa and Sumer, motifs that have been 'transformed in the hands of Egyptian artists'. He emphasises that it is important to bear in mind firstly, that these objects are usually found in Upper Egyptian or Lower Nubian contexts, thus strongly suggesting a southern route of access, and also secondly, that these objects (the earliest ones being paralleled with Susan and not Sumerian examples) must have come via another intermediary than Sumer, but unfortunately one which we do not at this time know (Smith 1992, 245).

To return to the manner in which the ceremonial objects have been interpreted, Engelbach (1943, 204-205) is amongst those who take the depictions more or less at face value. In terms of the location of and participants in these 'battles' there is also great debate. Engelbach (1943, 204-205), however, is actually in favour of a non-Egyptian location. He believes that the somewhat legendary king Menes (the mythical unifier of Upper and Lower Egypt) was the 'hereditary chief' of the tribes that had formally invaded Egypt, and that he was chosen to head a united front against further invaders from Asia (Engelbach 1943, 204-205).

Emery (1961, 38) also used ceremonial objects, including the Gebel-el-Arak knife handle, to support his theory of invasion. He accepted the hypothesis that Lower Egypt (centred at Buto) extended rule over Upper Egypt (centred at Hierakonpolis) for a period, and considered that the final unification took the form of conquests (Emery 1961, 42). By the time of the unification he theorises that the northern and southern centres had changed to Saïs and Thinis respectively (Emery 1961, 42). Emery (1961, 42) cites both the Narmer palette and the Scorpion macehead as providing evidence in favour of military conquest (contra Kaiser 1985; Schulman 1991/92; Millet 1990, 59; Wenke 1991, 303).

It is important to touch briefly upon the possible reasons for the crafting of these objects, who might have owned them, and who their 'audience' would have been; in addition there is the issue of the exact manner in which the object, and hence the narrative, was intended to be seen (Davis 1992, 18, 21). This latter point is vital and much has been taken on face value in the past, without actually considering the purpose of the original object. Hassan (*pers comm.*) does not believe that these palettes were for public display, rather that they were only to be seen by the gods and priests. It is the Narmer palette, contemporary with the Narmer and Scorpion maceheads, dating to early Dynasty I, that Davis (1992, 160) believes may represent conflict of a 'local' nature, between King Narmer and peoples directly to the north or south (Davis 1992, 160). Davis (1992, 165, 172) does not, however, assume the depictions reflect the wars of unification, and debates whether the central figure is in the process of acquiring new territory, handling a revolt, or another action entirely (Davis 1992, 165, 172).

Seidlmayer (1998, 28) interprets the Narmer palette as a 'claim' of monopolisation of power by the Egyptian state, and, he suggests, art 'striving towards 'monumentality', and Wildung (1984, 269) further remarks on the depictions as an 'heraldic fixation of the situation reached in ca 3,100 B.C.', rather than representing any historical truth. Seidlmayer (1998, 28) does note, however, that the ceremonial maceheads and palettes, including that of Narmer (from the Main Deposit at Hierakonpolis), had been 'dedicated to the god Horus'. Wilkinson (2000, 393) further comments that King Narmer himself gave both the Narmer palette and macehead to the temple of Horus at Hierakonpolis as an establishment of the relationship between the 'institution of kingship' and Nekhen, and then travelled to Delta centres, including Buto and Saïs, effectively to 'reinforce' their relationship to the new royal court. Seidlmayer (1998, 30) summarises that the unification took place, gradually, over a long time, rather than being achieved through rapid conquest, or the acts of one individual; a fitting summary in terms of correlation with the actual archaeological evidence.

Pérez Largacha (1994, 492) discusses an alternative view of one of the palettes, the Libyan (or 'Towns') palette (Figure 2.3). This palette has been previously interpreted as depicting the defeat of Lower Egyptian 'cities' during the unification period, however, a

number of scholars have, for many years, disputed the validity of this interpretation (Nibbi 1979, 148-149; Bietak 1986; Pérez Largacha 1994, 492). Bietak (1986, 32) remarks that 'Leurs house ne mettent pas les villes en pieces, comme on l'a admis jusqu'ici, mais creusent plutôt des tranchées de fondation', that the hoes wielded by figures over the towns are not destroying them, rather creating foundation trenches. Pérez Largacha (1994, 492), also considers that the images on the palette may, in fact, have represented the 'foundation' of sites by a centralised authority, which concurs with hypotheses that trade played an important part in the growth of the state, and that the state were creating, rather than destroying towns with access to these trade routes (cf. Wilkinson 2000).

While a number of these and other hypotheses have espoused a conflict within the Delta, or an incursion of foreigners, the discussion below (Section 2.4.2) looks to the archaeological record within the Delta, and reveals the lack of hard archaeological evidence for destruction layers within the stratigraphy at sites so far excavated (Kaiser 1964; Wildung 1984, 269; Pérez Largacha 1994, 493).

2.4.2 The view from the Delta

Until the 1960s, as we have seen, the literature generally describes the ancient Delta as mainly swampy and/or hostile. Hoffman (1980a, 122) comments upon the view of the Delta, specifically that held by Baumgartel (1947), noting that she let the Naqada culture outshine the 'overall cultural and environmental setting of the Predynastic societies of Upper Egypt', and she could not 'appreciate' a possible link between these geographically diverse peoples.

Van den Brink (1988; 1989) is amongst those writing more recently who has the opportunity to discuss events from the perspective of the evidence from a number of sites within the northeast Delta. He suggests that the differences (both in architecture and ceramics) between the earlier and later strata at Tell Ibrahim Awad are 'possibly reflecting an original Delta culture' during the Late Predynastic, and more similarity with contemporary sites in the Nile Valley and Delta during the Early Dynastic, presumably suggesting heightened influence and/or contact with other sites (van den Brink 1988, 77;

1989, 78). Similarly at Buto, van den Brink (1988, 79) comments that mud-brick architecture is introduced during Schicht III, and prior to this in Schicht II, Upper Egyptian imported vessels have been identified (Naqada IIc-d, Naqada IIC-D), which is taken as representing a transitional period (Hendrickx 1996, 62). Van den Brink (1989, 80) considers that the evidence from the northeast Delta is not in favour of a 'war-like' expansion of the Naqada II culture, prior to the unification. Although the evidence does show cultural discontinuity, he feels that it is dangerous to automatically attribute these changes to the spread of the Naqada culture, while the nature and cause of this change is still ambiguous (van den Brink 1989, 78-81). In particular, he stresses the lack of evidence for destruction or a significant break in occupational phases at a number of sites (van den Brink 1988, 80). Pérez Largacha (1994, 490) also emphasises that the growth of the east Delta sites and the evidence for Upper Egyptian influence/contact may be seen as largely due to the 'commercial importance' accorded by their position on the trade route to Palestine. Indeed, the conclusion that he reaches is that a prime mover in the growth of the Egyptian state was this 'preoccupation' with foreign trade, and that the unification of Upper and Lower Egypt had occurred in the Naqada III period (Pérez Largacha 1994, 491). These remarks are supported by Wilkinson (2000, 386), who comments that the presence of Palestinian vessels in Tomb U-j at Abydos (the largest of the Predynastic 'elite' burials) serve to reflect power (cf. Porat and Goren 2001 for discussion of petrographic analysis of vessels from Tomb U-j).

Von der Way (1992, 3-4), one of the excavators of Buto, considers that the evidence from this site supports a gradual transition as opposed to an episode(s) of violence or complete expulsion, and coins the term 'cultural superposition by assimilation' as the process leading to only one existent culture from the end of the Naqada II period, followed by political unification in Naqada III. He stresses that political and cultural unification are not to be equated (von der Way 1992, 4). This is an important point, since the evidence suggests political unification as an event occurring some time after cultural unity was achieved. He also raises the possibility of the presence of at least one Upper Egyptian chieftain in the Delta before the political unification, providing yet another interpretation of the Narmer Palette (Section 2.4.1), and suggests that the victory shown is that of an Upper Egyptian king over an Upper Egyptian chieftain of a 'territory belonging to the

Naqada culture only', not necessarily victory over the peoples of Lower Egypt (von der Way 1992, 4-5). This is perhaps more credible, since Hoffman (1980a, 323-324) considered that the rulers of Naqada had established an area of rule from their home in Upper Egypt to the Delta, and that Hierakonpolis then became rather more powerful and had to win the Delta from their southern neighbours. Spencer (1993, 53; cf. von der Way 1992, 4; Köhler 1996, 220) also considers that steadily increasing uniformity in material culture throughout Egypt, from south to north, had been achieved before political unification came about, although he is of the view that the latter had been a 'steady process', not one of 'sudden dramatic change' (Spencer 1993, 53). He suggests that rather than a one-off battle to achieve the unification, the greater likelihood is that of a number of smaller 'skirmishes' between local chiefs, who were trying to hold onto their land, and possibly conflict with other people from the desert regions (from iconographic evidence of peoples on a number of the palettes) (Spencer 1993, 53-57). In addition Spencer (1993, 53-57) suggests conflict with 'little known' Upper Egyptian rulers, and he describes as the final consolidation by Narmer himself.

Köhler (1996) stresses that the transitional layer at Buto from the indigenous Lower Egyptian culture to the Naqada culture is representative of a 'slowly evolving acculturation' with no evidence for a hiatus (cf. Mark 1997, 102). Köhler (1996, 216-218) supports intense contact between Upper and Lower Egypt from the Early Predynastic period onwards, and proposes the possibility that different ecological, craft specialisation and economic factors were the reasons behind local differences. She most reasonably considers that the two regions grew together as a result of trade and cultural exchange and that the abandonment of the Lower Egyptian sites, Maadi, Wadi Digla and Heliopolis, reflected commercial needs rather than violent contact (Köhler 1995, 86; 1996, 220; cf. Mark 1997, 103). Likewise, Mark (1997, 126) comments upon the Upper Egyptian expansion into Palestine (by Naqada IIc [IIC]), and the disappearance of the indigenous Lower Egyptian Maadi culture, which he also believes was in response to increasing trade between Lower Egypt and Palestine, and a desire to gain control over the trade routes (cf. Hassan 1988, 165-166; 1997b, 478-479). He does believe, however, that both Buto and Saïs may have fallen in 'the final subjugation of the Delta', although we

must remember that the archaeological evidence (in terms of a layer of destruction) is lacking (Mark 1997, 120-121; cf. Hassan 1997b, 476, 479).

Of the Delta, during the Terminal Predynastic period, Baines (1995, 101) notes that the importance and size of sites in the vicinity of Memphis did increase, but that they had 'no strong earlier traditions', that the region did not have former historical importance. The political and economic importance is clear, as noted elsewhere in this chapter, the Delta sites having built up a commercial relationship with Palestine (Baines 1995, 101). Baines (1995, 103) persists in attributing a good deal of Near Eastern contribution in order for the Delta sites to have reached 'high levels of material and artistic culture'. However, surely the sites of Buto, Saïs, and Tell Ibrahim Awad even, must have developed some historical importance in the preceding period. He remarks that the uniformity of the end of the Naqada II and Naqada III periods throughout Egypt suggest 'large-scale organization and integration of the land and economy, probably accompanied by some movement of people' and, furthermore, believes that military action would have been required for this to happen, taking place during the reign of possibly more than one king (Baines 1995, 102). This is what he believes to be the unification, and he considers that kingship 'arose' before the centralised state, or possibly during the process of state formation (Baines 1995, 103). Interestingly, Fattovich (1979, 218) purports that the Naqada chieftainship was in fact 'the prototype of the historical kingship'. As to what stimulated state formation, Baines (1995, 104) proposes economic growth, long-distance trade, and other foreign relations, although further comments that maybe rather a number of these things could have come out of state emergence, rather than before. Indeed, Wilkinson (2999, 388) commenting upon the greater involvement of Abydos in terms of access to Lower Egypt and her trade networks, suggests that this gave the Thinite rulers the 'decisive advantage' over the elite of Hierakonpolis. Hierakonpolis, Wilkinson (2000, 390) notes, appear to have held a similar advantage vis-à-vis their contacts within Nubia. Kingship is what Baines (1995, 105, 147) believes to have maintained and symbolised the unification, and associated emergence of complex society, within Egypt, noting that 'From before "history" began, Egyptian society centered on kingship'.

Finally, a note must be made concerning doubts held by scholars over the terminology that is employed throughout the literature. Wildung (1984, 269), for example, is in favour of a gradual cultural evolution within Egypt, both Upper and Lower, and the inclusion rather than conquest of the Delta. He discusses the 'rise' of state society by Naqada III at the latest, although referring to 'the fictitious unification'. Siegemund (1999, 29) does not favour theories based on conquest leading to unification either, and indeed goes so far as to suggest that there was not a political unification or a state during the 'first dynasties'. Siegemund (1999, 19) notes that while scholars have gone to great lengths to discuss the rise of the Egyptian state by the end of the Predynastic, it is worthwhile dwelling on the idea that although much 'preparation for statehood' was occurring in the Naqada III period, it actually came into being much later and in a very different way than that 'conjectured and hypothesized'. Guksch (1991, 46) does not, however, even consider that Egypt was a 'full-fledged stable state' until after the First Intermediate Period (2134-2040 BC). He perceives that statehood was achieved rather through a gradual process of 'modification of a complex chiefdom into a state' (Baines and Málek 1980, 36; Guksch 1991, 46).

2.5 Summary

In terms of the driving force behind political and cultural unity, we have come a long way. This is not to show a lack of respect for the hypotheses espoused by scholars writing over 100 years ago, but rather to accept the many changes in thought and new material arising from excavation that have emerged during this period of time. Ideas have developed through new schools of thought, through what other social and political movements have existed in a particular time. It is now possible to see internal indigenous development as having occurred within Egypt; we still can see influence coming in alongside, for example, trade items, but we no longer rely on events that occurred in Mesopotamia, for example, to explain Egypt. Rather we see Egypt as a separate entity in terms of development, an entity placed within the wider world. Of primary importance for this work is the development in terms of Delta research. For years this 'swampland' was considered to have produced very little, even to have been inhabitable, and definitely nothing to compare to Upper Egypt. Now, however, thanks to the work of an increasing number of scholars it is no longer a case of a great imbalance between the superiority of

Upper Egypt in comparison to Lower Egypt; rather two geographical regions, indigenously different, with different stimuli in terms of environment, access to resources, and trade routes, and, as Hoffman (1980a, 195, 200) so importantly noted, different agendas. We no longer accept that an invading force had to be responsible to explain stark changes; we no longer accept that irrigation was the driving force behind Egyptian state formation. Rather, a more realistic multivariate view has been adopted. It is most probable that at the close of the fourth millennium BC Egypt still largely comprised a number of regional chiefdoms, perhaps gradually staking their territorial claims. This happened in Middle Egypt, Upper Egypt, and Lower Egypt, and it happened with variations in each case.

Research conducted to date, though initially grounded in an Egyptological framework, has also seen a great deal of progress in tandem with developments within mainstream archaeological practice and theory. It is only more recently, however, that we have really been able to witness the two coming together. My own research into social transformation in the Delta aims to contribute towards our knowledge of social organisation at this crucial period in a region largely neglected by research until recent years. Despite the great increase in research focussed on the Delta, the knowledge of whether Upper and Lower Egypt were two separate, yet unified, regions is unclear, and as to the degree of conquest, and the degree of peaceful infiltration, it seems that we are coming closer to fitting the pieces of the puzzle together, but the picture is still far from complete.

From the archaeological evidence that we have at this time, it still seems apparent that the larger 'centres' existed in Upper Egypt, at Hierakonpolis, Abydos and Naqada. In the Delta, in addition to the evidence for centres at Buto and Tell Ibrahim Awad, further excavation into the lower levels at Saïs should help significantly in determining the nature of the role taken by key centres in Lower Egypt within the Predynastic period (Wilson 2001, 5). It is becoming increasingly clear that the communities of Lower Egypt had a different indigenous background to Upper Egypt, in so far as can be seen from ideological conceptions within the mortuary evidence. Despite the position of the northeast Delta sites in terms of access to raw materials and finished goods, the fact that they did not

utilise these goods as a form of legitimisation through burial requires further investigation.

A number of issues raised during this chapter have particularly strong implications for my area of research (northeast Delta). The importance of regional differentiation is an issue that I will be taking strongly into account, both in terms of looking directly at the archaeological evidence, and in terms of considering theories relating to the rise of complexity. The literature reviewed in this chapter has made this point fundamental. The possibility of Lower and Upper Egypt having different 'agendas' (Hoffman 1980a) has been discussed and accepted. However, it is of consequence that I focus on the reasons behind this and the dynamics that might change these agendas. It is also essential to investigate the variety of causes for change within society, and I will consider which external or internal impetuses may have driven changes witnessed in the communities under study. It is also of great significance to bear in mind the temporal differentiation in terms of cultural and political unification, since the outer limits of my dataset are between the Late Predynastic and Early Dynastic, and it might be expected that much cultural uniformity is visible by this point. My primary evidence comes from mortuary contexts and as such this thesis will concentrate on the modes of mortuary treatment in Predynastic and Early Dynastic Egypt together with methods of visualising and interpreting social differentiation within cemeteries. The research being carried out should yield some important clues as to the status of social differentiation, ideology and competition during the Predynastic to Early Dynastic period. The results of the analysis should put me in a position to draw conclusions on which types of theories discussed here hold most weight in terms of my findings, and indeed allow me to substantiate alternative hypotheses, or make variations on those already espoused. In the following chapter, I will look to approaches that have been made by scholars investigating the rise of state society in non-Egyptian and Egyptian contexts, both in general and regarding mortuary contexts.

3 Critical Approaches for the Application of Mortuary Data to the Rise of Complex Societies

3.1 Introduction

My research explores evidence for temporal change in social organisation and differentiation during the transition to statehood in Egypt. I have already reviewed a number of key theories regarding the origins of statehood in Egypt in the previous chapter. However, in order to take this forward and consider how best to approach my dataset, I will now look to the research undertaken by scholars working in both other disciplines and other geographical regions. This will enable me to consider my data in light of previous analytical and theoretical approaches within anthropology, archaeology and Egyptology.

In order to begin to address the problem of the origins of complex society, it is first important to establish some basic definitions of the kinds of societal structures that we may encounter; secondly, to explore how researchers have so far tackled the issue of identifying social change through mortuary evidence; and thirdly, to clarify what aspects of other researchers' analytical approaches I will be incorporating in my research on Predynastic to Early Dynastic social organisation.

3.2 Social and political organisation – definitions and terminology

In discussing the evolution of political society, Fried (1967) breaks basic social structure into three main categories: egalitarian, ranked, and stratified. Each of these represents a greater degree of differentiation between subgroups within societies, and shows signs of increasing vertical hierarchy. In this section I focus on the terminology of Fried (1967), as well as that of Service (1962) and Johnson and Earle (2000), because the most widely used terms of social evolutionary theory have been drawn from research undertaken by these scholars. Subsequently, I will examine some critiques of evolutionary theory in order to explore what might or might not be of use to my research.

The first category, **egalitarian society**, is not intended to represent a structure whereby all members of a community possess 'true equality', rather it suggests one in which formal ranking or stratification is not present. 'Egalitarian' expresses a society in which there

are a sufficient number of positions of merit-based status to allow access to anyone with sufficient age and ability (Fried 1967, 28, 33). It might more generally be seen as a society in which conditions necessitating a competitive arena are absent. Johnson and Earle (2000, 44) stress the division of labour between men and women in such societies, but note that the relations 'tend to be egalitarian', with each sex playing specific roles. Universal access to food resources and lack of restriction of land are characteristic of simple societies, but it is recognised that a number of factors might sometimes result in food being unequally distributed throughout the community and that this unequal distribution might result in a number of different reactions (Fried 1967, 71-73). Johnson and Earle (2000, 44) comment that possession of certain skills might create advantages in so far as the acquisition of food. They refer to this stage as family-level organisation, and stress that the 'primary factors of production', access to the land, labour and technology, are attainable by family groups, until 'broader-scale institutions' begin to emerge (Johnson and Earle 2000, 41-42). Service (1962, 47) comments upon all band level societies being foragers; basing his categories on Steward's (1955, 122-123, 143) definitions of 'composite' and 'patrilineal' (patrilocal) types. Patrilocal bands are defined in terms of exogamous marriage and virilocal residence, displaying great variation in terms of habitation and 'related to peacemaking alliance and offense-defense situations', and being the 'simplest' social structure, 'an inevitable kind of organization' and therefore reasonably 'the earliest' (Service 1962, 56, 63, 97). Any inequalities of authority within egalitarian communities are believed to be transient (Fried 1967, 83).

It is considered that within egalitarian societies positions of leadership only arise in connection with problematic situations that require mediation and problem solving, and that leaders are only temporarily elevated to such positions and do not remain when the crisis has passed (Johnson and Earle 2000, 44). At this point it seems that the role of the leader is far from being institutionalised, rather it is taken up by an individual attempting to step forward and provide an aspect of control over a given situation. It is also noted that in this type of social structure, warfare and territoriality would have been rare, with issues of land and resources being dependent upon kin or clan ties, and kin groups working to 'minimize risk' (Johnson and Earle 2000, 43-44). Fried (1967, 98) believes that much of the impetus for potential new cultural development may be attributed to

'carriers of new elements', who move social organisation beyond the bounds of kinship groups, and accordingly create new political dynamics.

In a **ranked society** there is no longer an even balance between positions of status and people with the ability to fill the position, rather the number of able people greatly outweighs available positions of authority (Fried 1967, 52). But it does not necessarily follow that the society is stratified. On the matter of stratification, Johnson and Earle (2000, 126) comment that local group leaders in ranked societies do not possess 'exclusive control of resources' although they may have greater control than others. Such leaders may be termed headmen or Big Men. Service (1962, 103) notes that tribal leaders may exist for specific purposes, to act as advisers, as opposed to representing 'political offices containing real power'. Johnson and Earle (2000, 203-204, 211) discuss the phenomenon of the 'Big Man Collectivity', and explain that the Big Man gains an advantageous economic surplus and is able to take on greater responsibility for his local group. The Big Man may also be provided with both titles and emblems concerning the wealth and territorial extent of his group, and is in control of inter-group activities, ceremonies, trade, and production and distribution (Johnson and Earle 2000, 124).

In a case study concerning the Indian fishermen of the northwest coast of North America, the Big Man emerges as the figure responsible for the organisation of family groups for large-scale community works. His wealth, amassed through contributions from his followers, is either re-invested or redistributed, and some wealth may go into prestige items for the group or for ceremonial exchange (Johnson and Earle 2000, 211-212; cf. Fried 1967, 133). Johnson and Earle (2000, 212-213) note that Big Men will only give a ceremonial feast if they can impress other groups and are likely to be in a position to enhance their labour force, and increase chances of being able to amalgamate other groups within theirs. Fried (1967, 109) stresses that while positions of prestige are restricted in ranked societies, access to resources for all members of the community remains. What may be occurring to increase inequality within ranked communities, however, is the giving of 'gifts' by individuals or groups to others, thereby 'creating obligations' among the recipients of these goods (Fried 1967, 115). This, however,

presents a problem in so far as the individual may obtain a position of higher status without necessarily having anything material to show for it (Fried 1967, 115).

The importance of proving links with the ancestors is also thought to play an important role in ranked societies in creating authority based on kin relationships, and Service (1962, 106) also stresses the need within "tribal" society for a 'concept of descent' and the feeling of 'common ancestry' (Fried 1967, 116).

What is notable is a declining correlation between age, sex, and the position of the individual within ranked societies: Johnson and Earle (2000, 126) note males taking a more superior role, with subsequent female devaluation in status. It is also vital to bear in mind the vast potential for differentiation in terms of social roles and ownership within the living community, as exemplified through ethnographic studies. Johnson and Earle (2000, 223) note two examples: one of a group (Mount Hagen) where women are involved in '(re)production' and men in exchange, and another example (Enga) wherein the men are associated with public displays of wealth and gift giving, whereas the females are actually more closely associated with the prime source of wealth (pig husbandry).

Fried (1967, 112) comments that social differentiation might be observed through burial practices within ranked societies, but also warns that burial methods might not 'confirm to later generations the existence of differential status'. In addition, he stresses the correlation between increased population and population density as key factors in distinction of ranked from egalitarian societies, and the diversity in age and sex proportions as being a 'result rather than a cause of the distinctive features of rank society'. It may be possible to witness a reduction in the proportion of adult males, due to an increase in warfare corresponding to changing social organisation (Fried 1967, 113). Service (1962, 99), Fried (1967, 115) and Johnson and Earle (2000, 123) all acknowledge that this stage of societal development may be influenced by the food producing revolution, but Johnson and Earle also stress the role of the development of 'formal social institutions' at this point. Johnson and Earle (2000, 123) note that what they term as local groups, are held together by 'emergent patterns of leadership with extensive ceremonialism', and different family groups are now starting to live and to work as a

larger unit. Service (1962, 100-101, 105-106) sees the 'tribe' (ranked societies) representing more 'kinship segments' than the 'band' (egalitarian societies), with greater and more consistent economic productivity. Peebles and Kus (1977, 423, 445), however, dismiss the idea that a ranked society/chiefdom must necessarily have an 'economy based on redistribution', and I agree entirely that such delineations are too strict and have a propensity to bring us back to the rather tunnel-visioned world of checklist evolution. Johnson and Earle (2000, 124) discuss how local groups take responsibility for controlling access to land, and defence of this land, and act to coordinate the groups working from this land. This phase of societal development is also represented by the growth of alliance and exchange networks between these local groups (Johnson and Earle 2000, 124). Service (1962, 103-104, 117) sees what he calls tribal societies as non-institutional, but subject to increasing competition, and witnessing the development of 'concrete residential groups' into 'more abstract sodality-like relationships'. It is important to note that within ranked society, the family group still retains control in so far as day-to-day matters are concerned (Johnson and Earle 2000, 124).

The definition of **stratified society** places a greater emphasis upon the importance of economic status as a correlate with social status and inequality in respect of the right of access to basic resources (Fried 1967, 52, 188-189). Fried (1967, 186) describes how stratified societies, through the increase in unequal access to resources and exploitation of human labour, create 'pressures unknown in egalitarian and rank societies'. Service (1962, 133) terms the initial phase of stratified social development the "chiefdom", which he describes as a more densely populated society with greater productivity, and with more complex organisation in terms of economic, social and religious matters. He differentiates states from chiefdoms by the division of the state into a series of political classes as opposed to socially defined classes, with bureaucratic and social differentiation (Service 1962, 163-164). Fried (1967, 196) offers, as an impetus for these changes within societal structure, factors including population pressure, shifts in postmarital residence patterns, sudden alteration in resource availability, affects of technological or market system change on subsistence patterns, and/or development of 'managerial roles' within 'a social and ceremonial system'. He does not feel that slavery and warfare are causes, but rather symptoms of change stemming from differential access to basic resources

(Fried 1967, 191). Once stratification emerges it is seen as a progressive development by which the most highly stratified group with its 'privileged access' to resources can move quickly in terms of 'political power' through their control over the labour force (Fried 1967, 207).

Johnson and Earle (2000, 250) suggest that power over the polity is strengthened by means of display in the realms of religion, military and public obedience. Service (1962, 141) discusses competition and warfare between tribes in terms of their presenting a condition that contributed to the formation of chiefdoms. Service (1962, 134-139) describes chiefdoms as '*redistributional societies* with a permanent central agency of coordination', with social inequality prevalent in addition to inequality in terms of consumption. At this point the existence of a permanent chief ('hereditary office of chief') is seen to imply the presence of other high status positions that are likely to be filled by the chief's family members, resulting in the establishment of a particular family's importance (Service 1962, 139-140). Within this hierarchy, offices are likely to be inherited by the eldest son of the chief, since 'offices are typically and ideally hereditary' (Service 1962, 147). Likewise, if an individual outside of the chief's direct family is able to achieve a position, they in turn will strive 'to make succession hereditary' (Service 1962, 153). Johnson and Earle (2000, 246) discuss this progression of societal development under the umbrella term of 'regional polities'. This term encompasses Big Man collectives, to simple chiefdoms, to complex chiefdoms, and on to regional states and empires (Johnson and Earle 2000, 246). They emphasise that in regional polities the family group maintains day-to-day matters, although these groups become increasingly constrained by institutional economic control (Johnson and Earle 2000, 247). They describe the 'primary unit of settlement' as being the village that is under control of, and defended by, the chiefdom (or the state) (Johnson and Earle 2000, 247-248). The chiefdom may be small in size with leaders occupying a range of positions and it is noted that even in states, the administration may still be based on 'personal (often kinship) bonds' (Service 1962, 140; Johnson and Earle 2000, 248). In regional polities, larger scale production and technology are subject to hierarchical organisation, with greater dependence on regional elites for both economic and administrative purposes (Johnson and Earle 2000, 249).

It is noteworthy that within chiefdoms where a particular family specialised in a certain craft this role would be maintained within the family (Service 1962, 138). Defence also becomes increasingly the concern of the regional polity, with military service required to defend territory and resources, and to extend the polity's sphere of control (Johnson and Earle 2000, 249). It is at this juncture that polities no longer represent a presiding entity over a community of family groups but now may encompass a wider range of peoples of diverse background, and an increased stratification and diversity of class may become apparent (Service 1962, 156-157; Johnson and Earle 2000, 259). Service (1962, 142) notes that the local chief would have organised matters on both a local and a regional scale, creating what he describes as a 'pyramidal organization', and most importantly that the position of chief would have become a position that existed independently of the holder. This being the case we may expect to see greater evidence for articles associated with the post (Service 1962, 146-147).

The male – female relationship is also noted as becoming increasingly dominated by the man, with patrilocal inheritance and residence (Johnson and Earle 2000, 251). Fried (1967, 229, 235, 236) concludes that the state is 'the complex of institutions by means of which the power of the society is organized on a basis superior to kinship' and that it maintains 'a specific order of stratification'. Fried (1967, 231) describes how institutions grew and coalesced from chiefdom into state society, a development that could occur quite rapidly. The key differences between complex chiefdoms and the state lie in that complex chiefdoms had restricted 'elite' leadership in terms of centralised storage, large-scale technology, warfare and external trade relations, however, the state represents integration on a larger scale, incorporating centralised bureaucracy, military, state religion and peace-keeping (Johnson and Earle 2000, 301-302, 328). The state represents legitimate use of force where required, which Service (1962, 163) describes as 'that special form of control'. It is also necessary that states maintain increasing levels of hierarchy, accompanied by growing differentiation in terms of access to resources (Fried 1967, 230-231). Johnson and Earle (2000, 329) describe the necessity of this stratification in terms of preventing 'economic crisis', and Fried (1967, 230-231) adds that it is necessary for the central hierarchy to maintain differentiation in order that it may function to maintain social order (Fried 1967, 230-231).

To summarise the above discussion, egalitarian societies are characterised by their lack of formal ranking or positions based on stratification. Positions within egalitarian communities are based on age and ability, rather than birth and inheritance, and the only unequal access to resources is likely to be by individuals possessing different and specific skills. In terms of leadership, individuals are likely to rise to prominence in times of crisis only, with territory largely defined by kin/clan relationships. Communities may not have had a great deal of contact/interaction with other groups, which could account for the lack of economic competition within these societies. The progression to a more highly structured society may be partly due to increased contact with outside areas and/or the introduction of new elements, resulting in the kin group no longer being the sole organisational principle. What differs for a ranked society is the rocking of the egalitarian equilibrium within what may be a more highly and densely populated society, and the negative change in proportion between positions and individuals capable of occupying these positions. The sphere of control of local leaders is also extended through amalgamation of other communities in response to an increased need for labour and increased warfare. There is not a distinct change whereby access to resources is restricted, rather the increasingly unequal distribution of power feeds a system whereby some individuals are in a position to give more to others, consequently creating obligations for the recipient, or resources may be ploughed back into the system, also potentially creating prestige for a few individuals. It is also very important to note that while the 'Big Man' within a ranked society may control most of the societal wealth on behalf of the community, we must recognise the existence of other factors that affect differential ownership/status within the group, because these may well be translated into grave provisions (cf. Johnson and Earle 2000, 223).

In ranked societies the importance of legitimisation through links with one's ancestors is also a key factor, and I stress here that such means may clearly reflect competition. Ranked society is also correlated with more intensive food production and the development of social institutions. Family groups, still maintaining the basis of social structure within ranked society, may be working together in larger units in response either to population change, or changes in agriculture, and alliances between regional groups are expanding. Stratified society is characterised by the correlation of economic status with

social status and inequality in terms of access to resources. This, together with increasing exploitation of labour, puts the community under new pressures. Elements of social, economic and religious organisation, with new permanent occupational roles, may become apparent in tandem with the growth of population, productivity, and technological and subsistence changes. With the increasing prevalence of privileged access to resources, it becomes increasingly simple for a group to progress vertically within society, and with this comes the impetus to create methods of display through which to reinforce power. Articles of office are also emerging in association with the position of a chief, although I might add that it is worth noting that these objects may well be handed on to successors, rather than being in the possession of an individual, since such positions now exist independently of the individual. Other positions of high status may still be inherited through family connections within "chiefdom"-like stratified societies. In terms of the family group, this remains the essential basis for controlling day-to-day matters, and runs alongside the power of regional elites that exist for defence, military service, economy and administration. Within state society, however, the family group no longer maintains its organisational importance, with kin groups becoming increasingly less significant as the growing class system maintains a political basis (Service 1962, 163-164). Within each potential type of social organisation it is vital to recognise the importance of the changing role of kin groups. Their increase and/or decrease in importance might prove key in terms of how we interpret the mortuary record.

It is useful to conclude here by summarising these changes briefly: within egalitarian and ranked society, family groups are key in daily organisation within the community, however, we might not expect to see inheritance of position/wealth through mortuary record. Within "chiefdoms" family groups retain their importance and, in addition, familial inheritance of position and of wealth may be detected through the funerary ritual. Once a stratified society becomes a state, however, it is considered that the family group will decline in importance in 'favour' of centralised control; while we might detect privileged treatment of an important individual's family through the mortuary record, the organisation of stratification will not maintain its familial base.

3.2.1 Social and political organisation - discussion

It is useful to have socio-political terminology, although, much criticism has been levelled against aspects of neo-evolutionary theory. Scholars have attempted to consider societal growth by fitting societies into categories of different stages of growth. By trying to fit societies into neat boxes, and often overlooking cultural variation between different communities, research has tended to find similarities rather than differences between societies. By placing too strong an emphasis on the artificial categories discussed above in Section 3.2, we might run the risk of trying to apply neat divisions that may simply not have existed and which may blind us to the possibility of more diverse systems of social organisation and more gradual development (Spencer 1990, 1-3). We need to consider that societies do not necessarily adhere to a set progression from egalitarian to ranked to stratified, and that decline may also be inherent within societal development at any stage (Yoffee 1993, 71). Taking this possibility into account, strict categorisation and progression in one direction only, might deter us from considering that it may be reasonable to find the presence of some aspects of a ranked society, for example, within an egalitarian one. However, if we take Yoffee's (1993, 71) point of development and subsequent decline into account, then we can be more open to considering the possibility of the multi-directionality of development. To put it plainly, we should not be too quick to ascribe static definitions to societal stages and impose outdated checklists, rather we should consider the dynamics and fluidity that come into play. Chapman and Randsborg (1981, 12) caution against trying to force prehistoric societies onto an 'evolutionary scale', since we really need to focus upon the specifics of 'social variation', which are indeed wide, with great variability apparent in Egypt, for example, both throughout the country and regionally. Paynter (1989, 379) also warns against trying to pick out all the similarities and differences between societies as evidence of interaction and advocates looking for different agendas within communities and different belief systems and ideology. The neo-evolutionist belief that complexity equates with inequality is also criticised by Paynter (1989). Early societies often have indicators of inequality, for example in the mortuary ritual. However, these do not necessarily suggest the existence of complexity. Paynter (1989, 380) follows the line that individuals are creators rather than bearers of culture, and does not hold that complexity is a viable 'touchstone' for ordering sociocultural variation. Rather than centralisation being a driving force behind

inequality, he reasonably investigates the notion of monopolisation being a cause of change, whereby attempts to monopolise power and access to resources lead to increasing inequality (Paynter 1989, 382-383).

In a similar vein, McGuire (1983) has raised the problem of equating heterogeneity with inequality, stating that while this holds true in some circumstances, many factors could rock the balance. He notes that 'increasing inequality' may occur in the population distribution of a society, represented by a differential access to material and social resources (McGuire 1983, 101). In this instance he describes the measure of inequality as the 'difference there is between comparable levels of access'; the greater the 'relative inequality', the greater the chance of a small group dominating society, with one result of this being a greater disparity in 'social resources' of that society (McGuire 1983, 101, 104). He makes it clear that material objects will highlight the inequality, and in terms of my research, this may be detectable through the variation in the numbers and types of grave goods present (McGuire 1983, 104). He clearly states that if any of the 'classic prime movers of evolutionary theory' (those being defined as environment, technology and demography) change, then these may favour the richer or more powerful sectors of the society, than the poorer, or those with less influence, and this would result in increased inequality (McGuire 1983, 106).

It is also of importance that once hierarchy becomes apparent then there is the potential for multiplication of this hierarchy (McGuire 1983, 108); this may show interesting results in terms of the dataset that is being utilised here, especially where the temporal phases have been clearly delineated. This will be discussed again in Chapter 6. If the number of groups/hierarchical levels increases, we could actually witness a decrease in inequality, with less difference between each level; whereas in more simple societies the first movements towards inequality might show an increase in heterogeneity (McGuire 1983, 109). Of interest to this work, McGuire (1983, 111) uses the early kings of Egypt as an example, proposing that when Egypt becomes united under a single ruler, then society in general will display greater heterogeneity than that displayed by any of the earlier separate societies. Looking in terms of the whole region under a monarch, however, he suggests this may possibly reveal a lesser degree of overall heterogeneity.

The point to stress is that the relationship between heterogeneity and inequality 'is not a simple, positive one' (McGuire 1983, 114). A further vital point that he makes is that perhaps by approaching changes in society through the rise of 'complexity' we are actually introducing hurdles for ourselves, since there is so much embedded in this terminology that it may not allow for the great variation that actually exists in societies inhabiting various geographical and temporal locations (McGuire 1983, 92). This is a further reason why I have attempted here only to utilise aspects of the evolutionary terminology and not employ it lock, stock and barrel, preferring rather what McGuire (1983, 132) describes as 'measurable variables', since the potential for obscuring the view of discrete region-specific societal variations is too great.

Another possibility for the examination of social organisation is presented via the notion of a heterarchy, which Crumley (1995) notes has arisen due to 'dissatisfaction' with the band, tribe, chiefdom and state model of Service (1962; cf. McIntosh 1998; R. J. McIntosh 1999, 63; S. K. McIntosh 1999, 75). Crumley (1995, 3) defines heterarchy as 'the relation of elements to one another when they are unranked or when they possess the potential for being ranked in a number of different ways'; she notes that power can be 'counterpoised rather than ranked'. This form of organisation is suggested as 'highly stratified horizontally', in contrast to the vertical stratification associated with centralised power and complex hierarchy, and more balanced across society (McIntosh 1998, 304; S. K. McIntosh 1999, 75). Crumley (1995, 4) discusses the relationship between heterarchy and hierarchy, noting the fluidity and potential for a heterarchical society to become hierarchical 'and vice versa'. An important aspect that she discusses is the inherent possibility of 'Heterarchical relationships among elements' in a given spatial scale being 'hierarchical at another'; this being so, it may be possible, therefore, to witness a society that is heterarchical on a local scale, yet part of a hierarchy on a wider regional scale (Crumley 1995, 4). McIntosh (1998, 9) notes that hierarchy is not seen as a necessary institution for information distribution, or for response to events. Rather, heterarchy is seen as a 'cradle' for the multiplicity of units that aggregate to check substantial inequalities in the distribution of power. It is a stretch from the notion of increasing complexity being associated with competition for power and means of legitimisation, to heterarchical organisation, where a network of groups effectively manage and check the

distribution of power (McIntosh 1998, 9, 229). However, the possibility of localised heterarchies existing within a larger complex hierarchical system may be a promising hypothesis in considering the development of early complex societies (cf. Crumley 1995, 4).

The critics have proposed manners in which we might adapt and modify social evolutionary theory to better suit archaeological data (Spencer 1990, 22; Yoffee 1993, 71). Spencer (1990, 22) proposes that we look to both historical and environmental factors and their role in creating 'the selective context' for the development of societies, and Trigger (1998, 130) cautions quite wisely against the assumption held by both Sahlins and Service (1960), 'that cultural variation was quite limited'. Taking the stance that cultural variation is, in fact, considerable between societies, we might expect the development from simple societies to statehood to be diverse. Factors that require attention include the environment, community interaction, and access to resources (Yoffee 1993, 71). Spencer (1990, 6-7) discusses the self-sufficiency of local groups ("chiefdoms") and the possibility that authority may not have extended beyond their immediate surroundings. Visibility of a greater diversity of resources/materials in the archaeological record might be evidence to suggest increasing interaction between communities, and this in turn might present a more competitive environment wherein material legitimation starts to become increasingly important (Spencer 1990, 6-7). Paynter (1989, 380-382) suggests the importance of looking at attempts on monopolisation by local leaders, which he believes may have created institutionalisation prior to centralisation.

In perceiving the basic categories of egalitarian, ranked, and stratified societies, it is most important to look out for where and when we can detect signs of increasing economic inequality, evidence for more or less dependence on kin groups and signs of more or less institutionalised order. In addition, increasing inequality in access to resources, and greater influence of neighbouring communities and centres may provide evidence of increasing complexity in social organisation.

Another serious issue is that social evolutionary theory has been largely derived through early ethnographic studies (Trigger 1998, 130). The definitions and terminology discussed here are, to a great extent, based on the premise that living or historically recorded societies represent every possible type of social organisation. It is fair to say, however, that this is probably very far from the truth, and the likelihood is that many more forms of society once existed, which have no living/recorded counterpart. The real danger may lie in trying to force an inaccurate framework onto a past society, where the evidence simply does not fit. The only real means of assessing the organisation of early non-complex societies, is through the archaeological record and not through modern analogies (Trigger 1998, 163; also see Chapman 1995, 48). Parker Pearson (1999, 20) also warns that rather than trying to pull out ethnographic parallels we should be concentrating on looking at a broad range of living and recorded practices and avoid placing 'the rationalizations of our particular ethnocentric cultural logic onto the past'. Guksch (1992, 8), however, discusses the importance of ethnographic analogy, stating that if 'one permits generalizations and statements about human and cultural universals' then this may provide us with an idea of how social systems functioned in Predynastic Egypt. It is very true that ethnographic studies may help shed light on specific events, such as the funerary ritual, which is the area that we are probably least likely to find represented in the archaeological record, which is further discussed in Chapter 5 (David 1992). This is a fair line of enquiry, and may act as a useful approach in certain instances, raising new interpretations that the archaeological data alone would not allow for. There are, however, dangers inherent in such approaches, and these must be recognised when attempting to use ethnographic analogies.

While retaining only Fried's (1967) basic terminology as a guideline for discussing social change in society, it is important to turn to the literature on mortuary archaeology and examine how previous research has dealt with this form of data, specifically in dealing with issues of social development.

3.3 Previous applications of mortuary data to the issue of the rise of complex societies

In this section I will look at some of the work carried out by researchers investigating the rise of complex societies through examination of the mortuary data; discussing what aspects/techniques I find particularly appropriate for my research, and which key points I choose to carry forward into my data analysis and discussion. While this section will largely focus on approaches to mortuary archaeology in a non-Egyptian context, to enable me to incorporate useful methods undertaken elsewhere, it concludes with a discussion on some key research carried out on Predynastic and Early Dynastic cemeteries.

Chapman and Randsborg (1981, 3) note that it has only been since the early part of the 20th Century that social organisation has been thought of as usefully addressed through mortuary practices. Indeed, earlier scholars had viewed it more as a means of understanding 'primitive religion'. In this section we will see both of these aspects covered, with particular discussion of 'philosophical-religious factors' apparent in the work of Carr (1995). In the early 1970s, only a little progress had been made into methods of observing differences in belief systems, funerary practice, social organisation and systems of social value, through the mortuary record. Binford's (1971, 18) approach was to investigate what he termed 'dimensional distinctions' which he listed as age, sex, social position, subgroup affiliation, cause of death, and location of death. He felt that there must be a correlation between the number/types of distinctions that were made and the complexity of the society. He categorised his study collections into four types of society: hunter/gatherers, shifting agriculturalists, settled agriculturalists, and pastoralists (Binford 1971, 18). It transpired that the first three of these groups displayed little difference in distinction between one another, whereas the fourth group, pastoralists, showed far greater differentiation with regard to his 'dimensional distinctions' (Binford 1971, 18). He suggested two components for investigating the social standing of the deceased, firstly, the social persona ('a composite of the social identities maintained in life and recognized as appropriate for consideration at death'), and secondly, the relationship between the person and the community ('the composition and size of the social aggregate recognizing status responsibilities to the deceased'). The social persona is also referred to in the work of McGuire (1983, 101), and he described these 'social

parameters' as 'sex, ethnicity, age, wealth, power, and religion', suggesting that the larger the number of 'distinct social personae' then the greater potential for complexity. The relationship stated by Binford (1971, 17, 21) between the individual and the community is given as being important, since it will reflect the degree of the 'duty status' relationship between the deceased and the community. Applying this theory, he suggests that in egalitarian societies children should be of low rank and have had few 'duty-status' relationships with the community, whereas adults would be expected to have had more relationships with the community (Binford 1971, 21). Thus, we might expect that in non-egalitarian societies with ascribed status, children could be born with inherent relationships within the community.

This opens, however, a further discussion into whether well provided for child and young adult graves necessarily suggest inherited wealth, or are rather informative of responses to grief within the community. MacDonald (2001) discusses this issue through illustration from ethnographic studies, which suggest that the death of young adults does create a response of 'heightened grief', translated into a greater number of grave goods and a more elaborate funerary ritual (MacDonald 2001, 706). It is also noteworthy that the reaction to the death of young adults appears to inspire more grief than for infants or the elderly (MacDonald 2001, 707). Additional possibilities for the special treatment of young adults are considered: more adornment in respect of attracting 'mates', the lack of necessity of keeping wealth in the living domain if the deceased has no offspring, and the explicit display of wealth by the family in response to the chance of another kin group taking over due to the 'power vacuum' left by the deceased (MacDonald 2001, 712). To provide a further example, Mizoguchi (1992, 44) comments, in his analysis of bronze age linear barrows in southern England, that there are 'different material categories' seen in the burials of adults and infants/youth. Van Gennep (1960, 2), in stressing the far greater importance of factors of age and sex in 'semi-civilized' societies as opposed to our own, discusses the potential of examining the possibilities of 'rites' that had/had not occurred at a given time of death; these might help us to better understand apparent differences in the mortuary treatment of individuals of certain ages (van Gennep 1960, 2). Van Gennep (1960, 152-153) notes, for example, that 'children who have not yet been incorporated into the society of the living cannot be classified in that of the dead'. MacDonald (2001,

707) also raises the issue of responses to the death of very young children, and he cites as an example, the belief in aboriginal society that children under the age of four years old do not actually have souls and, therefore, there is no ceremony associated with their passing (see also Carr 1995, 120). Such examples, will of course not always be relevant cross-culturally, and indeed Meskell (2000, 425) comments on ancient Egypt that 'children were perceived as social beings who were also multiply constituted, just as adults were'. It is, however, still an important issue to consider, especially for early Egyptian society. MacDonald (2001, 708) does add that in some 'achieved-status' hierarchical societies it would, in fact, be 'culturally unacceptable to translate grief into grave-good abundance'. It is, therefore, perhaps rather the case that in small or kinship-based societies with non-inherited status, we are more likely to see variation in the mortuary record 'based on reproductive value and grief' (MacDonald 2001, 708, 711). It is, after all, vital to assess as many factors as possible that might reflect in burial, since certain crucial factors could result in a very rich or very poor burial, which does not reflect the status, in terms of the wealth or power within the community, of the deceased (MacDonald 2001, 711). It is important to watch out for changing patterns, and it may be that kin groups become less important as centralised state connections become more so.

To return to the discussion of how the status of the individual might be represented through burial, the variables employed in Binford's (1971, 21-23) mortuary analysis are, quite reasonably, differential treatment of the deceased's body, differential preparation of the grave (or place in which the individual is disposed of), and differential amounts/types of grave goods. The study shows that most variables and many forms of dimensional distinction are dependent on social position and status (including location of burial and grave size) (Binford 1971, 21-23). Binford (1971) believes that we are looking for the specific dimensions of the social persona, which should be observable through differentiated mortuary ritual, and which will vary according to the organisation and complexity of the society. Carr (1995, 152) considers age, gender, vertical and horizontal social position (which will be discussed below), personal identity and social classification of the deceased at time of death as 'common' dimensions in a number of funerary practices. Parker Pearson (1998) also raises several issues that it is crucial to be aware of (as detailed below). However, it is equally crucial in my opinion to acknowledge that

matters may have been somewhat more straightforward. He considers that the artefact assemblages are more closely tied to the 'structure of the funeral' than the actual 'status' of the individual being buried, with three 'orders' of material, listed as: items 'affixed' to the body, placed around the body, and the 'discarded paraphernalia of mourning' (Parker Pearson 1998, 32). Everything to do with the grave is considered to be a 'construction of an image in death', and he warns that this identity may have little connection with the identity of the individual in the living world (Parker Pearson 1998, 32). The crux of the argument appears to be that we should be looking beyond 'a simple index of wealth and status' and rather than looking solely to the number and type of grave goods, be aware that these do not represent 'the sole axes of differentiation'; a poor grave, he notes, may purely be indicating that the individual was so well known to those burying him/her, that there was no need for 'further indexical referencing' (Parker Pearson 1998, 39).

Parker Pearson (1999, 94) stresses the importance of looking to what he calls 'broader political and ideological currents in society' as a means by which to assess what we can imply by the presence of certain grave goods in terms of inheritance and 'social persona', for example. In terms of considering the relationship between the community and mourners, as discussed above, it is also important to consider on the one hand, whether grave goods are the possessions of the deceased or gifts from mourners, and on the other hand, whether the tombs and contents form what he calls 'a principal means of acquiring and demonstrating power' (Parker Pearson 1999, 94, 193; Endesfelder 1984, 98-99). Furthermore, Chapman (1981; 1995) discusses mortuary practices with reference to territorial considerations and apparent regional differences, looking to 'broad correlations' in terms of mortuary evidence and social and economic change. In light of evidence from Denmark, it is clear that we do not observe a straightforward relationship between increasing agriculture, territorial awareness, descent-group association, and 'formal disposal of the dead' (Chapman 1981, 79-80; 1995, 38). Chapman (1981, 79-80; 1995, 38) prefers to consider a process of longer duration, affected by 'recurrent imbalance between population, resources and society'. In terms of Parker Pearson's (1999, 94, 193) assertion of 'power' through the tomb, Chapman (1981, 80) deems that megalithic burials may suggest the necessity of symbolising control over certain resources 'in a more impressive, visible manner'. Chapman (1995, 44, 47) further

stresses that early megalithic monuments might be central to the landscape rather than central to 'defended areas'; we cannot ultimately assume proximities of cemeteries to settlements. The degree of labour required to construct large monuments is also of key importance, moreover, since this labour was directed to a 'minority' of the community (Chapman 1995, 46). Such direction of resources effectively widens social differentiation, indicating the existence of competition and the need for legitimisation of one's importance through some means (Chapman 1995, 46). The scope for intention behind such monumental mortuary structures is wide, and certainly Chapman (1995, 47) considers these 'more than just formal disposal areas'. In addition, it is important to recognise that degree of differentiation between modes of burials is also key (Chapman 1995, 48).

To focus on 'formal disposal areas', Goldstein (1981) believes that where there are delimited and permanent burial areas we also have 'corporate groups' who control restricted resources and territory, and who might legitimise their position through association with ancestors (Chapman 1981, 74; 1995, 32, 48; Parker Pearson 1999, 141, 193). Goldstein (1981, 56) attempts spatial distribution analysis, to identify clusters within the burial area, to assess whether they represent differential zones of social status, and to consider whether the principles of organisation for the cemetery may reflect those of the living society. One of her key observations is that we need to address the interrelations between groups, and their function, as opposed to purely attempting to identify types of status (Goldstein 1981, 56). She suggests that through exploration of spatial distribution it may be possible to correlate spatial relationships of family groups of different status within the society, and their descent groups (Goldstein 1981, 57). Goldstein (1981, 59) discusses 'Hypothesis 8', created by Saxe (1970; 1971, 51), which raises the issue of the importance of legitimisation within descent groups and ancestors in terms of gaining access to and control over restricted resources. She also suggests that these groups will be buried within 'bounded disposal areas exclusively for their dead' (Goldstein 1981, 59). A comparable example is quoted by Chapman (1981, 73), where he remarks that the Zafimaniry of Madagascar, a mobile community involved in swidden agriculture, did not have descent groups associated with territory, nor did it have ancestor cults, or defined burial areas. Interestingly, however, in the central plateau region he

illustrates that the Merina, rice agriculturalists, try to maintain their territorial hold both through descent group links, and burial within monumental tombs (Chapman 1981, 73). Goldstein (1981, 61) is right to point out, however, that it is unreliable to suggest that all cultures will 'ritualise a particular aspect of their social organisation in the same form'.

To turn now to consider further issues of social organisation as reflected through the mortuary record. As noted above, the notion of 'horizontal' and 'vertical' differentiation within society exists, as presented by O'Shea (1981, 41). Horizontal differentiation is used 'to describe social differences, which tend to cross cut age and sex categories and rank distinctions', and vertical differentiation is considered to be akin to social ranking (O'Shea 1981, 41). It is accepted that it is simpler to detect vertical (social rank) than horizontal social division, since the former may be visible through the size and contents of the grave, with the latter possibly only recognised through physical bodily treatment (Chapman and Randsborg 1981, 12). Carr (1995) places strong emphasis on which 'determinants' are most likely to be reflected cross-culturally in spheres of mortuary practice, and discusses the importance of recognising that some aspects of the mortuary ritual are rather more reflective of 'philosophical-religious beliefs' than of social position (Carr 1995). It is important to note here that these philosophical-religious beliefs include folk beliefs and world-view assumptions, which include disease, dying and death (different manners of death possibly affecting the treatment and placement of the dead), the soul, the afterlife and the cosmos; furthermore, these beliefs are purported to determine mortuary practice 'directly and independently' of social organisation (Carr 1995, 107, 177). Of concern is that a number of elements of mortuary practice are not solely symbolic of social organisation or identity, and rather represent choice reflecting 'social or personal attitudes and values about those identities in relation to beliefs' (Carr 1995, 120). His initial approach has been to divide variables into two categories, 'response' or 'independent' with a view to establishing potential relationships between these (Carr 1995, 129, 135). To express these briefly, 'response' variables describe mortuary practices and forms: the body, grave , grave goods, disposal, location, and any potentially non-recoverable practices (Carr 1995, 129). 'Independent' variables include 'potential social, philosophical-religious, circumstantial, physical and ecological "determinants" of these practices': circumstances of death, physical requirements, social

position of the deceased, philosophical religious beliefs and ecology (Carr 1995, 133-134). What Carr (1995, 156) does stress from his investigation is that social and philosophical-religious beliefs are the variables most strongly affecting mortuary practices (beliefs regarding universal orders and symbols). In terms of the social factors, his research suggests that elements such as age or membership of a certain kin group are more often determinants than gender or personal identity (Carr 1995, 156). Aspects of mortuary evidence more likely to reflect social organisation include the internal organisation of the cemetery, energy expenditure on the grave and corpse, types of burials and numbers of bodies, together with totals of grave goods; those reflecting philosophical-religious beliefs include the positioning and orientation of the body and the spatial arrangement of the grave goods (Carr 1995, 157).

Something that I will be taking into account is that while social factors and philosophical-religious factors are influential at all levels of social complexity, social factors might be more prevalent between the stage of band level hunter-gatherers and petty hierarchies, whereas philosophical-religious factors are more so in simple societies and in paramount chiefdoms (Carr 1995, 171). To explain this simply, Carr (1995, 171-173) describes the rising importance of social factors with the increase of socio-political complexity, although noting that if this creates a rise in the importance of ancestor-worship beliefs as a means of legitimisation, then we might expect to see philosophical-religious beliefs assuming greater importance. This is important in terms of being aware that we can use mortuary evidence both for inferring the prestige of the individual and the complexity of the society, and to create inferences as to the belief systems within a given society, and indeed differences between communities (Carr 1995, 191).

O'Shea (1981, 49-50), however, remains convinced that while it is possible to observe social ranking (vertical differentiation) through mortuary evidence through observation of energy expenditure, it is not possible to detect kin-based subdivisions within the society. He feels that many of the horizontal elements of the society may be tied up in the now invisible ritual rather than burial (O'Shea 1981 49-50). He does, however, refer back to Binford (1971) who considers that the detection of symbolically distinctive artefacts, and the positioning and orientation of the body may indicate horizontal differences (O'Shea

1981, 49-50). It remains to be seen how revealing my dataset will be in terms of both types of differentiation (see Chapters 6 and 7).

To concentrate now on social organisation as visible through the burial record, O'Shea (1981) considers the importance of looking at grave size, spatial location, burial position and orientation, covering of the burial, and evidence for any methods of disposal other than burial. His analysis stems from the observation of the distribution of artefact types, and consideration of this distribution in terms of the age and sex of the individual, the locations of the artefacts and the quantity of the artefacts (O'Shea 1981). Following this, he looks to the co-variance of artefacts within graves and employs cluster analysis to pick out similar groups of graves in order to attempt to ascertain the 'underlying structure of the mortuary population' (O'Shea 1981, 43). When looking at the clusters, he is recording presence and absence of artefact types and the rate of co-variance of artefact types. O'Shea (1981, 44) aims, through these techniques, to break the mortuary population down into subsets, to consider the presence of differential mortuary treatment and the social significance of this by comparing this data with the 'expected' characteristics from living societies. O'Shea (1981, 44) considers it important to take into account the principle of energy expenditure with regard to social ranking, and investigate the occurrence of 'known sociotechnic artefacts' to reveal 'rank-related distinctions if they exhibited a limited or constrained distribution'. It is through this methodology that he attempts to infer the presence of differently ranked groups within different communities.

Another consideration, however, is how to approach periods when the mortuary record seems particularly sparse in terms of grave provisions. Chapman and Randsborg (1981, 13) suggest, through illustration of an example taken from Anglo-Saxon England, that we should be aware that specific societal occurrences, such as the inheritance rather than burial of possessions, might account for such differences within the archaeological record. From the foregoing discussion in Section 3.2, the matter of hereditary position and ownership has been touched upon, and it is clear that when investigating mortuary assemblages we must take into account the fact that dependent upon the possible type of social organisation, as Chapman and Randsborg (1981, 13) remark, inheritance might be

the simple explanation for a poor or lacking mortuary assemblage. It is also important to bear in mind the possibility of a multitude of ownership codes relevant to specific subgroups within different communities. Chapman and Randsborg (1981, 15) also stress the importance of multivariate forms of analysis, and not only the type of objects within the grave, but also the spatial location (for example). We should, however, not be too quick to assume that spatial positioning is always significant, since in some instances, or in some communities, it might be entirely random rather than reflecting any conscious social decision (Chapman and Randsborg 1981, 15).

Having just discussed how we might interpret a period with a distinct lack of grave goods, it is appropriate to raise here the issue of how sampling bias may affect/limit our view of wider social organisation in any given period (Goldstein 1981, 56). Particularly important, in view of my research objectives, are Goldstein's (1981, 56-57) comments on the value of looking at the 'time depth' of a site with respect to the 'rate of social change in the prehistoric society', and how this could result in misinterpretations in patterns of social organisation. These comments highlight the fact that while the mortuary evidence may be interpreted to reflect changes in social organisation, and/or the presence of groups/individuals of different ranking, it may equally represent temporally changing attitudes to the funerary ritual (Goldstein 1981, 56-57). The issue of temporal change is also discussed by O'Shea (1981, 45) and Parker Pearson (1999, 83). O'Shea (1981, 45) comments on the possibility that temporal development might be sufficient explanation for changes in funerary practice, as opposed to changes in social organisation, and Parker Pearson (1999, 83) picks up on the valid point that differentiation within mortuary remains can be dependent upon the temporal spread of the cemetery site. He illustrates this with the example of two burials made during different periods, which may appear to reflect very different social statuses, but might actually be comparable when viewed against the prosperity of the cemetery at the time of interment (Parker Pearson 1999, 85). Parker Pearson (1999, 91) further notes on this subject that some 'elite' items may have been more widely available during later periods of site occupation, and that an association of such elite goods with male and/or female burials, might help elucidate the presence of certain goods with religious and/or political leaders.

Finally, to mention the issue of multiple burials, to be discussed primarily in Chapter 7. Parker Pearson (1999, 116) discusses multiple burials and remarks upon examples where differentiation in attitudes to and treatment of the body are apparent. The examination of multiple burials holds great potential for looking at relationships between individuals, through the medium of differential funerary treatment (see Section 7.2 for further discussion). Comparison between multiple burial groups may also serve to illuminate aspects of the development of kin groups and/or structure within a society, which I will be investigating at Kafr Hassan Dawood, one of my key sites.

Mortuary analysis has, especially in recent years, contributed a great deal to the study of the Predynastic and Early Dynastic in Egypt; one of the earliest attempts at analysis (using statistics) was that of Mond and Myers (1937). Mond and Myers (1937, 9, 10, 17) excavated at Armant, in cemeteries 1400 and 1500, and even at this early date their work shows concern for the implementation of statistical methods, and stresses that in their own site recording they have learned the lesson 'that everything should be recorded, even if at the time it does not seem to be of any value'. They show consideration of such specifics as the ideology behind particular burial orientations, and possible reasons for its erratic nature; they also take into account the positioning of grave goods, the size of the grave, initially in terms of whether any standard system of measurement occurred, and they also implement a precise system of coding which describes the exact position of the deceased (Mond and Myers 1937, 10, 17). By recording the findings in full, they say that it is possible to apply statistical methods and correlate variations in the prosperity of a site with different time periods, and in short 'open up a whole new field of information' (Mond and Myers 1937, vii). The analysis carried out by Ellis (1996) on the 'valley' and 'hill' cemeteries at Kafr Tarkhan in the northern Nile Valley (Naqada IIIa2-IIIc3) clearly reflects how this problem hampers research. He notes the effect of inconsistent recording on the analytical potential of data, since a significant proportion of the 'hill' cemetery burials have either no data pertaining to their contents or spatial location, and there is no age and sex information for a high proportion of individuals in the 'valley' cemetery, and a substantial proportion in the 'hill' cemetery (Ellis 1996, 153).

A number of Predynastic and Early Dynastic Cemeteries in Egypt have been re-evaluated by Castillos (1982; 1997; 1998a; 1998b; 1998c; 1998d; 2000; 2003), who advocates consideration of both burial practice 'as well as some of their sociological and demographic implications'. In his research, Castillos (1982; 1998d, 27) undertakes simple bivariate analysis, for which he considers a number of different variables, depending upon the availability of data and the size of the sample: the size of the graves (divided into groups dependent on length, width and depth, with different classifications for each site), type of grave, wealth (classified in terms of arbitrary totals of overall goods), relative date of the burial, presence/absence of coffins, orientation of the body, number of individuals within a tomb, and the sex and age of the deceased. This method of analysis has allowed Castillos (1982) to successfully detect temporal trends in burial practice, revealing clear differences between the different phases of the Predynastic and the Early Dynastic, including the variable treatment of males and females.

Castillos (1997, 251; 1998b, 51; 1998c, 27) has commented upon 'more discriminating analysis' in terms of considering the various types of grave goods in addition to overall totals, since this may be informative concerning social conditions, including trade, mass production, craft specialisation, and luxury good manufacture. Herein, however, lies the problem of subjectivity in calculating value (Castillos 1997, 251; 1998b, 51; 1998c, 27). Castillos (1998d, 27) is concerned that we simply do not have sufficient evidence pertaining to what was of high or low value during the Predynastic and Early Dynastic periods to make further judgement concerning the relative importance of certain artefact types and materials. He prefers to look solely to overall total numbers of grave goods, through which we can detect a 'deliberate effort' to differentiate between the amount of artefacts with which the deceased has been endowed for the next world (Castillos 1997, 251). This he believes is a sound gauge by which to evaluate the differential prosperity of a given community (Castillos 1997, 251). Further variables and relative values have, however, been utilised in the analysis by Hendrickx (1994). Hendrickx (1994) has carried out research into 'social differentiation and specialisation' in the Naqada IIIA1-IIID cemetery at Elkab in Upper Egypt. Hendrickx (1994, 217) considers the examination of both quantity and types of grave goods. In contrast to Castillos (1998d, 27), he proposes calculating the 'relative wealth' of graves as a means of highlighting

differentiation within the cemetery (Hendrickx 1994, 217). It is notable that items which 'may be supposed [to have] had religious or political significance' are omitted from the analysis for the reason that this analysis concentrates on relative wealth (Hendrickx 1994, 217). As to the methodology employed for establishing relative values, Hendrickx (1994, 217) incorporates both possible variations in production time and cost for different types of ceramic vessels. His analysis categorises artefacts on a point system. The results of the analysis prove useful for inter-site comparisons, highlighting the fact that the Elkab cemetery contains a proportionately higher distribution of rich graves in comparison to other Upper Egyptian cemeteries (Hendrickx 1994, 221).

Castillos (1997, 251; 1998b, 51; 1998c, 27) also considers grave size to be a useful variable, since he believes that we can extrapolate this back from the Pharaonic period, where it has a consistent link with the wealth and position of the individual. Hendrickx (1994, 218) warns, however, that grave dimensions 'can often be doubted' and suggests rather that they are not vital since we would expect them to be reflective of the quantity and type of grave goods present (Hendrickx 1994, 218; contra Castillos 1997, 251; 1998b, 51; 1998c, 27). In his analysis at Kafr Tarkhan, Ellis (1996, 158), however, takes both volume and the construction of the grave into account. He looks at: i) the quality and number of grave goods; and ii) factors related to the size and architecture of the actual grave; he is quick to stress that they are interdependent and both vital in mortuary analysis (Ellis 1996, 154). His first step of analysis is to look to mean averages in both cemeteries, taking temporal phases into account, in order to measure 'the degree of inequality'; the results do prove revealing in terms of inter- and intra-cemetery inequality (Ellis 1996, 155). His analysis on the qualitative attributes of the grave goods emphasises the importance of considering both type and quantity of artefacts; again the analysis shows the significant differences between the cemeteries (Ellis 1996, 158). Bard (1994a) raises an interesting issue pertaining to analysis of the cemeteries at Armant and Naqada in Upper Egypt. She strongly believes that it may not be possible to detect evidence for 'central ruling authority' through the mortuary remains 'until this authority is consolidated'; adding that 'perhaps the only social trait' that will be detectable is an increase in social differentiation (Bard 1994, 36). Bard (1994, 36) considers that inequality is likely to be a feature of a complex society, and therefore proposes that there

might be value in considering differential access to resources as an indicator of this (Bard 1994, 36; cf. Castillos 1998c, 25). Furthermore, she remarks that inequality may be visible through 'an asymmetrical redistribution of the producer's surplus', together with differentiation in terms of the display of status and through both the grave goods and grave construction (Bard 1994, 36). Bard (1994, 87) considers the following variables as appropriate for investigating social inequality within the mortuary context: grave shape, size, location, orientation of the deceased, age (insufficient information was available for sex to be a variable), and the type, material and quantity of grave goods. Following initial analysis into the mean distribution of ceramic vessels, Bard (1994, 62, 87-88) also considers the frequency distribution of 'NewMaterials' (different types of raw materials), however, while we might expect more rarely occurring objects to correlate with the richest graves, this is clearly not the case; she does note the high possibility of this being related to widespread looting of graves in the case of Armant (Bard 1994, 62).

Spatial clustering is a further method of examination, as discussed earlier in this section, and Ellis (1996, 160) notes that through his analysis at Kafr Tarkhan this reveals not only clustering in terms of larger graves, but also in terms of quantity of artefacts, and 'rarer' artefact types. From the results of this analysis, he infers that the differentiation evident between the two cemeteries may be interpreted as suggesting competition between 'two discrete corporate groups', and an overall 'shift in the ritual focus of discrete areas of the "mortuary space"' between these groups (Ellis 1996, 161, 162; cf. Goldstein 1981). Such strong patterns, he feels, cannot be attributed to coincidence, and this highlights the effectiveness of spatial distribution as complementary to statistical analysis (Ellis 1996, 162; see Chapter 7). Ellis (1996, 161, 162) is also fortunate in being able to discern aspects of the funerary ritual and subsequent mortuary cult at Kafr Tarkhan, through the presence of chapels and offering niches in the enclosure walls of large mastaba tombs, and suggests that detection of increased investment in ritual may be another indicator of increasing centralisation within society.

To conclude this section on approaches to mortuary data within Egypt, there has been some recent research into the issue of gender relationships with early Egypt (Savage 2000; Hassan and Smith 2002). Savage (2000, 80) supports the value of multivariate

analysis when trying to elucidate information concerning social organisation; these he describes as intersecting 'spatial, formal, temporal, and demographic variables', and considers the response of each of these variables to gender. In consideration of the grave, Savage (2000, 83) chooses to focus on size, shape, and architecture (including roofing and wall coverings). He also investigates evidence for ritual as a means for establishing gender differences (Savage 2000, 84). Items that he considers to reflect the remains of the ritual include: remains of animal sacrifices, offerings of liquid and grain, ash-filled jars, charcoal at bottom of graves, 'deliberately broken' fine stone tools, balls of hair of deceased, mud-filled jars, and 'dummy bread offerings (made of mud)' (Savage 2000, 84). He quite reasonably infers that these items may 'qualify as indicators of elaboration of the funeral ritual'; reflecting funerary meals and also ceremonial activity. It is notable that Savage (2000, 86) is not primarily concerned with the wealth of the individual in this analysis, and therefore concentrates on the presence and absence of artefact types with either sex. This approach makes clear sense, since it is important to try and establish any broad relationships in terms of sex and artefact types, and quantity may be incorporated within a later stage of the analysis if required. In addition, he considers it prudent to compress artefact types by 50% to help highlight gender relationships in terms of 'social roles' (Savage 2000, 86). The results of this method of analysis do prove interesting, showing a greater number of roles for females than males, however to progress beyond this and try to access the actual nature of the 'social roles' may prove rather more problematic (Savage 1995, 225-232; 2000, 85-87).

Hassan and Smith (2002, 45) also consider the social position and roles played by women in the Predynastic to Early Dynastic, and choose as a means to do this, the examination of grave goods, figurines, palettes and iconography. They are also interested in specific 'dimensions' of males and females 'and the potential (symbolic) significance(s) of these differences' (Hassan and Smith 2002, 45). Their statistical approach involves looking at a group of variables, including artefact types, iconographic representations, colour, non-local materials and 'rare and unusual' goods, in an attempt to investigate what determines the 'factors' that result in variation of artefact types by sex, and their relative importance (Hassan and Smith 2002, 49). This 'combination of variables' may reveal 'parameters' within the data which may inform regarding 'social status, secular political power, and

religious power'; it is noteworthy that variables used widely in other analyses, grave volume and total goods, reveal very little apparent difference between males and females (Hassan and Smith 2002, 51-52).

Hassan and Smith (2002, 55) discuss their concern with the differences between 'our construction' of the body and that of the Predynastic Egyptians as a means by which to examine not the role of, but the way 'in which women lived' during this transitional period, a period during which we see many changes in terms of funerary practice. In so far as using iconographic evidence, they examine the relationship of women with various deities in early Egypt, and are able to note strong connections between females and iconography, including the association of females with cows, males with bulls, and the association between women and fertility (Hassan and Smith 2002, 57-59). The investigation pertaining to the relationship between females and objects of certain colours and certain types, proves to be enlightening (Hassan and Smith 2002, 61-62). It is poignant that they raise the issue that we do not actually know, amidst a discussion of gender, *who* played the key roles in choosing the type of grave goods and iconographical representations that we witness through the mortuary record (Hassan and Smith 2002, 46).

3.4 Theoretical and methodological approaches to the data from the key sites in the Delta

From the review of the literature in Section 3.3 there are a number of approaches that I intend to integrate within my methodology, and also a number of methods that other researchers have chosen not to incorporate for a variety of reasons, methods which I consider to be of value both for the current research and for the wider sphere of mortuary analysis. My methodology will include both single and bivariate analysis (see Chapters 4 and 6), in order to explore the burial data from a variety of angles and maximise inferences concerning both social differentiation, and consistency and change within ideology.

In terms of analysing funerary assemblages, while I accept Castillos' (1998d, 27) warning concerning the relative value of artefacts, I nonetheless consider it extremely important to

consider the diversity of artefact types in addition to looking at distributions of total goods (Hendrickx 1994, 217; Ellis 1996, 154; Nordström 1996, 36; Hassan in prep.). By including all artefact types within my analysis, it is possible to make inferences and suggestions concerning artefact association by sex, function and ritual, and facilitate investigation of potential subgroups within the population (O'Shea 1981, 43; Hendrickx 1994, 217, contra 221; Savage 2000, 84, 86; Hassan and Smith 2002).

Analysing frequency distributions of the full range of artefact types might prove valuable in terms of issues of inequality within and between societies, which may be reflected through differentiation in mortuary assemblages (Bard 1994, 36). Differential access to and increasing diversity in types of resources might be a further indicator of increasing complexity and inter-community contact; this might reflect the increasing need for legitimisation due to growing competition, and this may also be reflected through attempts at association with ancestors (Chapman 1981, 74; 1995, 32; Spencer 1990, 6-7; Yoffee 1993, 71; Bard 1994, 36). Differential access will also be explored from the angle of effort expenditure, in terms of both the contents and construction of the actual grave (cf. Tainter 1978, 125-125; Hendrickx 1994, 217, 218).

O'Shea (1981, 49-50) has posited that horizontal divisions within society may be harder to ascertain through the mortuary record than vertical divisions. It might be possible, however, to detect these divisions by examining variables including orientation and positioning of the body, which may be more likely to express ideology and belief systems; where it can be substantiated, evidence of the funerary ritual may also be enlightening as to horizontal division (Mond and Myers 1937, 10, 37; Chapman and Randsborg 1981, 12; Carr 1995, 107, 177). Spatial analysis is another means by which to consider the distribution of burial orientation, and Ellis's (1996, 160) interpretational comments on spatial clustering present further possibilities for detecting competition within society. Goldstein's (1981) comments on clustering as a means of detecting functional groups, and the possibility of observing declining importance in kin groups through spatial clustering will also be further considered (cf. Parker Pearson 1999, 85; see Chapter 7). I also wish to investigate Carr's (1995, 171-173) hypothesis that in 'simpler' societies we might expect to see philosophical-religious beliefs as prominent; social

factors may be detected as 'more frequent' when socio-political complexity increases, with an increasing number of specialised roles within the community; and with paramount chiefdoms, philosophical-religious beliefs might once more emerge as a means of legitimisation through media more powerful than the expression of wealth.

I am also concerned with exploring the potential for the reflection of grief through the mortuary ritual and the media of the grave. It may in certain contexts offer an alternative explanation to the inherited status factor in the analysis of burials of young adults and children (cf. van Gennep 1960, 152-153; Bard 1988, 52; Mizoguchi 1992, 44; Byrd and Monahan 1995; 277; MacDonald 2001; Section 5.2.1 and Chapter 6).

As noted by Hassan and Smith (2002, 46), it is important not to lose sight of the issue of *who* was doing the burying, and to keep in mind Binford's (1971) comments on duty-status relationships between the deceased and the community (Endesfelder 1984, 98; Parker Pearson 1999, 94, 193). I believe it is also vital to acknowledge this fact when exploring interregional differences in burial practice throughout Egypt; to consider the social and economic priorities of the community members and how we might expect to see this affect the burial record in different regions. This will be explored further in Chapter 5 where I review funerary practices throughout Lower Egypt, the Nile Valley, and into the Sudan in the Neolithic, Predynastic and Early Dynastic.

3.5 Summary

There are a great number of avenues to be explored with much potential for the study of the development of social complexity in Egypt via the mortuary remains, and the following chapter will present the new methodological approach that I will be taking to the mortuary data. It incorporates aspects of previous approaches that have been discussed from the literature, but I will be integrating in some respects a fuller range of data within my analysis, as a means by which to explore social differentiation, ideology, some aspects of the funerary ritual, and gender relationships. A number of the methods that I have chosen to adopt, and a number of the variables that I have included, have been rejected by other researchers, some for being inappropriate to their specific research focus, and some methods for their subjectivity. I believe that by considering a wide range

of variables through different analytical approaches, each with a number of key foci, there will be greater potential for discussing various aspects of social change. These various aspects of social organisation and change are inextricably linked and it, therefore, follows that they should all receive due attention. In the next chapter, I will describe in detail my methodological approach and the stages by which I shall examine the data. The theoretical and methodological approach developed for this set of mortuary data promises to yield some very interesting and possibly unexpected results.

4 Methodology I: Primary Mortuary Data

4.1 Methodology, Part I: Intra-site mortuary data

4.1.1 Database

I have chosen to collate the data, using standardised criteria, and store them within computer files in *Excel* for each site. The data from Kafr Hassan Dawood (KHD) is also attached to a Geographic Information System (GIS) in *ArcView*. The computerised databases (in spreadsheet format) for the sites of KHD, Kufur Nigm (KN), Minshat Abu Omar (MAO), and Tell Ibrahim Awad (TIA) are all stored as *Excel* files. The original database structure (for KHD) was compiled in *Lotus 1, 2, 3* by Fekri Hassan in 1995. I modified this in 1998 (Rowland 1998), and later added further variables for this research. The spreadsheets for all sites are shown in Appendix 1. I have taken advantage of the rich data that I have to work with and the recording system incorporates the elements that I think will provide an insight into social organisation and ideology. The categories into which the mortuary data fall are listed below, and specific details concerning each column of data are provided in Section 4.1.2.

- Grave number and location
- Types of artefacts and numbers of artefacts within graves
- Totals of goods: pottery totals; totals of non-pottery artefacts
- Number of types of artefact present in each grave
- Presence of potmarks/*serekhs**
- Grave size: length, width, depth, area and volume
- Presence of a coffin, or other means of bodily protection
- Human skeletal remains: orientation of the interred, position of body, and sex and age (where the site records provide this information)
- Distance scale: details pertaining to the possible origins of raw materials
- Presence of 'symbolic'** potsherds found in association with the skeletal remains

* Potmarks are marks made on vessels, which may indicate contents, quantity, origin and/or ownership and may suggest a central administration responsible for distribution

(Postgate *et al* 1995, 466). A *serekh* is an early device employed to frame the name of kings, the frame taking the form of the palace-façade architectural design.

** These potsherds are found in certain positions around the body, and as yet there is no consensus of opinion as to their symbolism (Hassan 2000a, 38, 39; Hassan *et al* in press).

4.1.2 Explanation of the data variables and associated codes

At the inception of the initial KHD database in 1996, Paul Sinclair of Uppsala University (joint director of the Swedish-Egyptian field season at KHD in 1996) noted: 'It was felt that every effort should be made to bring the existing data into a single unified digital frame of reference' in order to 'facilitate the analysis of existing information and provide a secure frame for the inclusion of new data from the ongoing excavation programs' (Preliminary Report 1996 field season, 3). I have created a number of additional variables to those on the initial database, in order to make the data as full and as accessible as possible, and I have also added a number of formulae to allow for automatic calculations from other variables, for example to calculate grave volume. A note should be inserted here with regard to the issue of data grouping. It has proved useful to compress variables where the sheer vastness of possibilities in range hinders the visibility of patterns. For example, grouping has been formulated for the size of graves, which otherwise leaves us with numerous possible outcomes. The original (specific) data are also maintained within the database so that the exact data can be accessed as and when necessary.

The following text describes each of the variable fields with which I am concerned for the analysis, together with the key for codes where a strictly nominal value is not possible/desirable. In addition, I must add that due to there being inevitable differences from the various sites in terms of recording, there is a slight variation within the layout of each of the spreadsheets (Appendix 1).

Grave Number

A unique number assigned to each grave. The provision of a grave number does not automatically imply that skeletal remains have been found. However, there are separate variables listed below that contain this data.

Square/Location

The location of the grave in relation to the excavation grid/site location is given. It is possible for up to four numbers to exist for one grave, if it runs into multiple squares on the excavation grid.

Artefact Types

These columns are self-explanatory and serve to record the number of each type of artefact/vessel present in each grave. A group of beads will result in a total of one, although where groupings of beads, or the positioning around the body, suggest multiple items of jewellery, then the total will be raised accordingly (cf. Castillos 1997, 251). The artefact 'type' referred to as 'SBS' includes items of stone, bone, and shell, and also includes other miscellaneous types which do not belong under the other artefact type headings, and for which the data would have proved too sparse to separate into individual columns. This artefact 'type' was only added when the data for KN and MAO were being collected; although the KHD database does not include this variable, where appropriate KHD will be drawn into the discussion of SBS artefact types.

Total Goods

A formula calculates the sum of the total goods in the preceding columns.

Status Goods

This records the total amount of what were considered (at the inception of the database) to be 'Status Goods', i.e. the total amount of goods less ceramic items.

Number of Types

The formula calculates the total number of different artefact types within each grave.

Actual Distance to Raw Material Sources

This provides the approximate 'actual' distance to sources of raw materials. This is based on the distance (in kilometres) to the closest mapped source of the material (see Section 4.3.2 below).

Distance Scale

To simplify the data for chart form, the following numerical values are given:

1 1-145km

2 146-319km

3 320-619km

4 620km+

The groupings are based on arbitrary divisions. Group 3 originally comprised two groupings, however on running analysis the lower of the two groupings was found to have no associated objects and therefore they have been combined.

Potmarks/*serekhs*

This serves to list the total number of potmarks/*serekhs* that have been found in any one grave. Where *serekhs* have been found, either a suffix of (s) has been implemented for ease of reference, or the information is provided in note form on the spreadsheet.

Length

Recorded maximum length of grave.

Width

Recorded maximum width of grave.

Area

The area of the grave, with this additional formula applied to round or oval graves:

$$=\Pi(L/2xW/2)$$

Round Area

The area of the grave is rounded to two decimal places using the following formulae:

=ROUND((LxW), 2) for square/rectangular graves

=ROUND(Π(L/2xW/2), 2) for round/oval graves

Log Area

A logarithmic formula is applied to the area calculation to correct the high positive skew of the data (C. Orton *pers comm.*; Shepherd 1997, 17-18).

Square-Root Area

Similarly to above, a Square-Root formula is applied to the area calculation to correct a moderate positive skew (C. Orton *pers comm.*; Shepherd 1997, 17-18).

Depth

The depth of the grave.

Volume

The volume of the grave. The volume takes into account the shape of the grave, and in addition, where measurements have been recorded providing different length and width dimensions for the bottom of the grave pit, then this is taken into account within the calculation. The formulae are given as:

For a rectangular/square grave with differing dimensions provided for the top and bottom of the grave pit:

$$1/6H(2L_1W_1+2L_2W_2+L_1W_2+L_2W_1)$$

For a tapering oval pit, with differing top and bottom dimensions provided:

$$\Pi/12D(L_1W_1+sqrt(L_1W_1L_2W_2)+L_2W_2)$$

Both formulae provided by C. Orton (*pers comm.*).

Shape of Grave/Grave Type

The variables inserted under this heading have been set as follows:

1	Rectangular
2	Square
3	Oval
4	Circular
5	Presence (or remains) of Coffin (wood or pottery)
6	Presence of Anthropoid Coffin

7 Containing Mud-brick (rectangular)
8 Compact Mud Circle
9 Jar Burial
10 Mud-filled
11 Remains of Matting and/or Cloth
12 No Discernible Pit
13 Not Noted
14 Irregular
15 Trapezoid
16 Mud-brick Chambered
17 Mud and Matting
18 Mud-lined
19 Mud-brick Lined (including pottery coffin)

These 19 variables cover the range of grave types recorded at all four cemeteries. Certain categories may only appear in one cemetery.

Orientation

Orientation comprises two variables, denoting the direction of the skull, and the direction in which the face is aligned. The values are expressed in degree form to the accuracy of: north, northeast, east, southeast, south, southwest, west, and northwest. There is also a value of U (up), which indicates a supine position; it may also be used to indicate that the skull is resting on the mandible. A third variable, azimuth, is recorded only for a number of graves at MAO (where the publications provide this information). This variable provides details of variation from north of the head-pelvis axis (Kroeper and Wildung 2000, XIII).

Position

This variable provides values to indicate either the position of the body, or presence of skeletal remains if position is not tenable:

1 Left side
2 Right side
3 Lying on Back

4 Evidence of Bones

5 Disarticulated Skeletal Remains

Potsherd

This variable is given a list of values that indicate the position(s) of possibly symbolic potsherds (Hassan 2000a, 38, 39; Hassan *et al* in press). This is currently only applicable to KHD, since the placement of similar sherds has not been detailed in the records for the other sites.

1 Face/Head

2 Hands

3 Scapula

4 Sacrum

5 Feet

6 Legs (femur/knees)

Sex

This variable is self-explanatory, with values of M for male and F for female, where skeletal evidence has been positively identified by a physical anthropologist (Section 4.1.3).

Age

Age of the deceased, either shown numerically, or included within the following categories:

INF	Infant	(less than one year-old)
C	Child	(over one year/under 13)
SA	Subadult	(13 to 17 years)
YA	Young Adult	(17 to 25 years)
MA	Middle-Adult	(25 to 45 years)
A	Adult	(where no more specific age range given)
OA	Old Adult	(45 years+)

Both numerical and descriptive age values are given. Ageing is largely dependent upon the condition of the bone, for example a poorly preserved skeleton might only yield

enough information to state conclusively that the deceased individual was adult, due to bone fusion (D. Antoine *pers comm.*; Section 4.1.3).

Grouped Age

Grouping has also been implemented for age categories, as shown below. The grouping was discussed with the main bioanthropologist at KHD, who suggested the categories of infant, child, subadult, young adult, middle adult and old adult, with the possibility of collapsing child and subadult together (Teri L. Tucker *pers comm.*). I have, however, added infant to this first grouping, especially in light of the sparseness of ageing details for some of the datasets. I will, of course, discuss specifics regarding age as necessary.

Infant/Child/Subadult	(17 years of age and under)
Young Adult	(17 to 25 years)
Adult	(e.g. 20 to 40, 20 to 60 years; less specific age ranges)
Middle-Adult	(25 to 45 years)
Old Adult	(45 years+)

These groupings are adhered to as closely as possible, although there are instances where an age range of 14-20 years of age has been given, and this particular example has been placed within Infant/Child/Subadult. In Chapter 6, I will make reference to specific ages, as required and when provided, in discussion of the results; the round ages are primarily given to help identify potential patterns within the data. Further details concerning the ageing methodology are given below in Section 4.1.3.

4.1.3 Bioanthropological methodology

It is appropriate here, without going into too much scientific detail, to briefly outline the key considerations by which age and sex are assigned. The 'Laboratory Methodology' for the human remains' analysis at KHD is detailed in an unpublished report on the *Bioarchaeology of Kafr Hassan Dawood* (Tucker 1997). Tucker (1997) notes that sex is based on 'overall robusticity' and 'observations of cranial and pelvic morphology'. Sexing is not attempted for subadults (Tucker 1997). The age assigned to adults is 'primarily' based upon 'metamorphic changes in the pubic symphysis'; for young adults

the 'Epiphyseal union' and 'closure of the basilar' suture are examined; and for subadults the age is 'derived primarily from dental development' (Tucker 1997). It has been possible for some individuals to be aged 'using dental eruption and dental wear scores', however, in some cases it has only been possible to assign the age as adult based upon the length of the long bones (Tucker 2003, 533). Where bone preservation did not allow for estimation of age, adult ages were based on dental eruption and on dental wear scores; ages based on dental wear are broken down into broad age range categories, for example, 17-25, 25-35, 35-45 and 45+, from the methodology of Miles (1963 in Brothwell 1981, 71-72) (Tucker *pers comm.*). Tucker (1997) also notes that following these ageing methods 'they are seriated and again aged to control for biasing and promote cross-referencing among all skeletal indicators of age'. It should be added that due to 'the friable and fragmentary nature' of the human remains at KHD the estimated age at death is not precise, and sexing is not always possible (Tucker 2003, 533).

4.1.4 Geographical Information System

The Geographical Information System (GIS) being utilised in conjunction with the database is *ArcView* (Rowland and Hassan 2003). The database table is joined (by the common variable of grave number) to an intermediate table in *ArcView* that links the quantitative data for each grave to the spatial 'polygon' data, situated within the excavation grid of 10m x 10m squares (Rowland and Hassan 2003, 417). It has only been feasible, due to availability of site plans, to undertake this additional analysis on the KHD data. The results of the analysis are presented in Chapter 7. The GIS holds the digitised plans of the graves from the Terminal Predynastic to Early Dynastic cemetery, and also from the Late Period to Ptolemaic cemetery, for the benefit of future researchers working on this material (Rowland and Hassan 2003, 419). The GIS was originally created in 1995 (by Ahmed Saleh, a team member of the KHD Project) and I have since updated it with all of the graves that have been discovered and/or excavated between then and the last field season in 1999. The use of GIS as part of my methodology is intended to complement the statistical analysis and it will help identify spatial patterning within the cemetery (intra-site); clearly it also has great potential for investigating inter-site variability. On the intra-site level, the temporal development of the site can be considered to a degree, since the earliest burials were made in the north near the floodplain (Hassan

2000a, 39). Certainly temporal development cannot be secured purely in spatial terms (cf. Savage 2001, 112, 121), and we know, for example, that the latest burial at KHD (within the early cemetery) is found in the north (where the earliest burials were made); the zoning of burials may also depend on other factors, such as 'descent' groups (Savage 2001, 119), 'corporate groups' (Goldstein 1981, 54), and even the 'duty-status' relationships between the deceased and the community (Binford 1971), or discrete burial areas based (for example) on gender (Hodson 1977, 397), social status or age (cf. Ellis 1999, 390), and possibly trade (Savage 2000, 126). I will explore these options systematically through observation of the spatial expression of a number of distributions, including grave goods (both in terms of artefact types and total numbers of goods), potmarks, grave size/type, and the orientation of the body. Through observation of grave sizes it will be possible to determine the degree to which large graves may act as 'centres of gravity' for smaller graves; and through observation of well-provided-for graves I can assess whether these occupy spatially discrete locations, or perhaps have a less dense distribution, since spatial demarcation may represent an additional indicator of status. It is also important to bear in mind the possibility of development and decline discussed by Yoffee (1993, 71), and to be aware that a number of reasons (some of which have already been discussed in Sections 3.2.1 and 3.3) may account for changes within the mortuary record (Goldstein 1981, 56-57; O'Shea 1981, 45; Yoffee 1993, 71; Parker Pearson 1999, 85).

4.2 Statistical analysis

To begin with, I would like to stress that for the main statistical analysis I am not including the multiple burials from KHD within the main database. I note KHD in particular, since there are a substantial number of multiple burials, 20; one grave contains at least nine individuals. These are, however, collated in an additional database (see Appendix 1), and I will, of course, be discussing the details of these graves as and when relevant during Chapter 6, and in Section 7.2. This decision has been made because such elements as grave size might well produce outliers within the analysis (especially in graves with a large number of individuals), and also because of the logistical difficulties of being able to analyse them as grave units in themselves, yet also keep the grave goods associated with the relevant individuals (cf. Hendrickx 1994, 218; Savage 2000, 83).

4.2.1 Similarity coefficient analysis

This is the first stage of the statistical analysis conducted using the *iastats* package (Duncan *et al* 1988), and deals with the presence or absence of object types in graves, as opposed to counts of objects per grave. From this package I have first used the *jaccard* program to calculate similarity coefficients (Sneath and Sokal 1973). Similarity coefficients are used to quantify resemblances between objects represented by two columns of a data matrix (Sneath and Sokal 1973, 116). The *jaccard* coefficient defines the similarity between two artefact types as the number of graves in which both types occur, divided by the number of graves in which either occurs. The data are input as lists of the types of artefacts occurring within each grave; the analysis may be run on mixed sex data, or divided into groups of males, females and unknown sex. The *jaccard* program calculates the coefficients and passes them to the *slca* (Single Link Cluster Analysis) program to display the similarities between the graves visually (Duncan *et al* 1988, 2). This combination of techniques has proved 'effective for clustering functional types in graves', and will be useful for making observations concerning artefact type associations in the early stages of analysis (Duncan *et al* 1988, 2; Hodson 1977, 401). It also enables me to consider the relationship between possibly 'functional' types, and (where possible) to assess the gender and age associations of certain artefact types. The latter may also suggest privileged access to resources by certain groups and/or individuals. The occurrence of groups of functional types may also reflect specialisation, which may in turn suggest an increase in societal organisation. Comparing the results at the inter-site level will help to assess whether any community appears to have advantageous resource access, whether age and gender relationships are constant, and whether artefacts appear to cluster in the same groups of types between the sites.

The analysis presented in Section 6.2.1 has initially been run on the complete datasets for KHD, KN, and MAO, in addition to being run again on the MAO data, after splitting this into gender categories. I am looking for potential relationships between artefact types and/or materials, and will then consider these results in terms of gender associations, and between temporal phases (where the dataset permits). It will be interesting to see whether any object types appear more limited to certain groups than others, and whether this has a close bearing to the gender or temporal phase of the dataset (cf. O'Shea 1981, 45; Section

3.3). Through the co-occurrence of artefact types, it is possible to try and detect whether there is any restriction that might be explained by subgroups within the population (cf. O'Shea 1981, 44; Section 3.3). The analysis is also run on graves with undetermined sex to see how the data behave, and age is also discussed (Section 6.2.1). It is important to look at the indeterminate burials in terms of data robustness. While we might consider this 'category' (or non-category) to evenly represent males, females, and individuals of all ages, it will prove informative to see how this data behave in terms of its relationship to the results from the sexed burials, and on the complete datasets.

Jaccard analysis has been run on all of the graves within each dataset that contain grave goods (Duncan *et al* 1988). I have chosen to use *jaccard* as a means by which to establish potential groups within the data based on functional types, and also to make initial observations regarding relationships between artefact types and either sex (Duncan *et al* 1988, 2). The program omits from the analysis those artefact types that occur less than twice in the entire dataset. The *jaccard* Similarity Coefficient program produces five tables/charts each time the analysis is run (Figure 4.1i-ii), and these comprise:

- Counts of association between defined functional types
- Percentage of contexts with column type that also contain row type
- Links and maximum similarity
- Single Linkage Dendrogram
- *jaccard's* matrix

Counts of association between defined functional types

	Eg Alabaster	beads	bracelet	copperneedle	flintblade	flintknife	palette	pendant	pottery	sbs	stonevessel
Eg Alabaster	2	2	0	0	1	0	2	1	2	1	1
beads	2	40	3	1	5	2	4	2	40	15	4
bracelet	0	3	4	0	1	0	0	0	4	2	2
copperneedle	0	1	0	2	1	1	0	0	2	2	0
flintblade	1	5	1	1	12	3	1	2	12	8	2
flintknife	0	2	0	1	3	6	0	0	6	4	1
palette	2	4	0	0	1	0	5	2	5	3	2
pendant	1	2	0	0	2	0	2	3	3	1	0
pottery	2	40	4	2	12	6	5	3	63	36	6
sbs	1	15	2	2	8	4	3	1	36	36	6
stonevessel	1	4	2	0	2	1	2	0	6	6	6

Percentage of contexts with column type that also contain row type

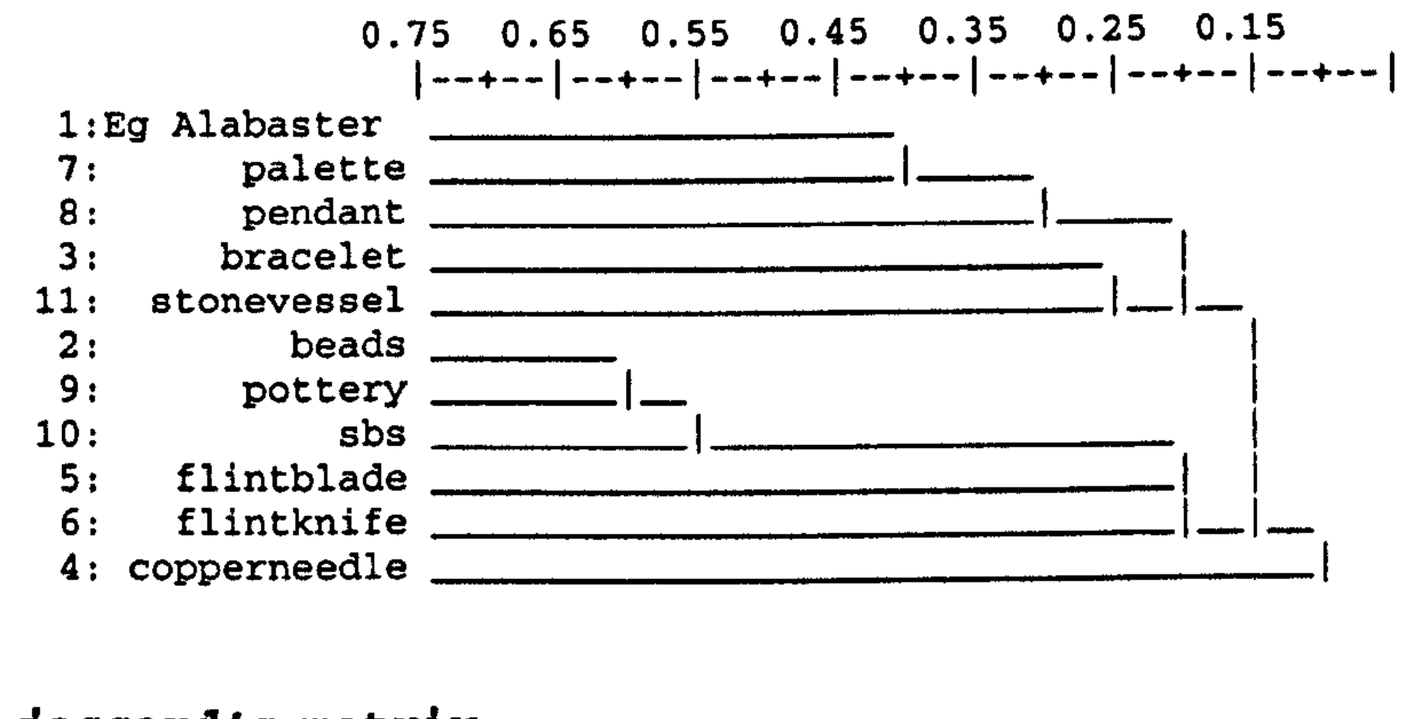
	Eg Alabaster	beads	bracelet	copperneedle	flintblade	flintknife	palette	pendant	pottery	sbs	stonevessel
Eg Alabaster		5	0	0	8	0	40	33	3	2	16
beads	100		75	50	41	33	80	66	63	41	66
bracelet	0	7		0	8	0	0	0	6	5	33
copperneedle	0	2	0		8	16	0	0	3	5	0
flintblade	50	12	25	50		50	20	66	19	22	33
flintknife	0	5	0	50	25		0	0	9	11	16
palette	100	10	0	0	8	0		66	7	8	33
pendant	50	5	0	0	16	0	40		4	2	0
pottery	100	100	100	100	100	100	100	100		100	100
sbs	50	37	50	100	66	66	60	33	57		100
stonevessel	50	10	50	0	16	16	40	0	9	16	

Figure 4.1i: Example of *jaccard's* output (continued in 4.1ii)

Links and maximum similarity

Unit		Link		Sim
1	Eg Alabaster	0	-	0.00
2	beads	9	pottery	0.63
3	bracelet	11	stonevessel	0.25
4	copperneedle	6	flintknife	0.14
5	flintblade	10	sbs	0.20
6	flintknife	5	flintblade	0.20
7	palette	1	Eg Alabaster	0.40
8	pendant	7	palette	0.33
9	pottery	10	sbs	0.57
10	sbs	11	stonevessel	0.17
11	stonevessel	7	palette	0.22

Single Linkage Dendrogram (maximum similarity)



***Jaccard's* matrix**

Eg Ala	beads	bracele	coppern	flintb	flintk	palette	pendant	pottery	sbs	stonevs
1.00000										
0.05000	1.00000									
0.00000	0.07317	1.00000								
0.00000	0.02439	0.00000	1.00000							
0.07692	0.10638	0.06667	0.07692	1.00000						
0.00000	0.04546	0.00000	0.14286	0.20000	1.00000					
0.40000	0.09756	0.00000	0.00000	0.06250	0.00000	1.00000				
0.25000	0.04878	0.00000	0.00000	0.15385	0.00000	0.33333	1.00000			
0.03175	0.63492	0.06349	0.03175	0.19048	0.09524	0.07937	0.04762	1.00000		
0.02703	0.24590	0.05263	0.05556	0.20000	0.10526	0.07895	0.02632	0.57143	1.00000	
0.14286	0.09524	0.25000	0.00000	0.12500	0.09091	0.22222	0.00000	0.09524	0.16667	1.00000

Figure 4.1ii: Example of *jaccard's* output (continued from 4.1i)

The Single Linkage Dendrogram (Fig. 4.1ii) displays this data most simply in terms of artefact type association and, therefore, this one type of chart will illustrate the results of the analysis in Section 6.2.1. The numbers running across the top of the Dendrogram may be viewed as percentages (e.g. 0.75 = 75%), and the numbers running down the left hand side are purely arbitrary, reflecting the alphabetical order of the artefact types. This

will help to identify the relationships of co-occurrence between different artefact types (shown as groups on the dendrogram), the strength of these relationships (in terms of percentage), and the degree of similarity and/or difference between the sites/time phases. Single Link Cluster Analysis is clearly described by Shennan (1997, 236), who notes that: 'The criterion of linkage in this case is that to join a group a given individual must have a specified level of similarity with *any* member of the group' (my emphasis); similarly for two groups to join, any one 'individual' must have this same 'specified level of similarity' with any member of the other group (cf. Doran and Hodson 1975, 176). These groups and individuals are most simply illustrated as the branches of the dendrogram in Figure 4.1ii. In this chart the closest relationship is between pottery and beads, and the second could be between SBS (stone/bone/shell, see Section 4.1.2) and pottery, or SBS and beads. In order to confirm the second closest relationship, *jaccard's* matrix (Figure 4.1ii) can be consulted, which in this instance reveals the link between SBS and pottery. This is also the case for the links between the dendrogram branches (Fig 4.1ii), when one of the objects is subsequently associated with an object within another branch. In this case SBS (in the lower group) links with stone vessel (in the upper) at 0.17.

4.2.2 Social status analysis

The second stage of the analysis uses the *socistat* program for 'investigation of status' (Duncan *et al* 1988, 2). *Socistat*, as part of the *iastats/iagraves* package, is designed especially for archaeological material and produces status tables (Duncan *et al* 1988, 1). *Sócistat* is sensitive to the size of the dataset being analysed, and works best with 'relatively large numbers of graves' (Duncan *el al* 1988, 4). The data are input in the form of lists of the types present in each grave. For each type, *socistat* calculates the average number of other types that occur in graves where that type is present; this is known as that type's 'status index'. Types are then ranked according to this index. *Socistat* provides two options by which to rank graves: i) according to the highest status type contained in the grave; ii) by the total of the status indices of each artefact type present (Duncan *et al* 1988, 4). I have chosen to rank the types according to option i); total artefact scores will be considered through Frequency Distribution Analysis (Section 4.2.3 and 6.2.3) and Bivariate Analysis (Section 4.2.4 and 6.2.4). *Socistat* presents the results in the form of a status table in which the graves are listed from top to bottom in

rank order according to the chosen option, and types are listed from left to right in order of increasing status score (Duncan *et al* 1988, 4). For example, if palettes are the type most consistently found in graves with the highest number of types, then graves containing palettes will be ordered first; position is not determined by the highest number of artefact types present (Duncan *et al* 1988, 4). Within the *socistat* charts, the '*' sign equates to the occurrence of an artefact type. To assist in the reading of these charts, where the chart shows a solid triangular block of occurrences (*) within the analysis of a cemetery population or a time phase within a cemetery, then a hierarchical structure within this cemetery/timephase is implied, and where many dots exist between the '*' signs, then this would rather imply the absence of hierarchical structure (C. Orton *pers comm.*). This is helpful in looking for degrees of inequality and potential situations of multiple hierarchies. Figure 4.2 shows an example of one of these charts based on one of the smaller datasets, the female graves of the MAO III phase. In order to take advantage of the chronological divisions presented in the MAO data, the data from MAO has been split accordingly, and is considered within three temporal phases (Section 6.1).

```
 1  Tomb_881    **........
 2  Tomb_340    **........
 3  Tomb_50     ***.......
 4  Tomb_673    **.*......
 5  Tomb_1287   *.**......
 6  Tomb_415    *...*.....
 7  Tomb_758    ***.*.....
 8  Tomb_1045   *.***.....
 9  Tomb_1666   **.**..*..
10  Tomb_400    *****...*.
11  Tomb_2200   *****..*..
12  Tomb_1455   ***.*.**..
13  Tomb_329    **.***..*.
14  Tomb_73     *****....*
15  Tomb_866    ***.*..*.*
16  Tomb_434    *****..*.*

                pbpstfpcsb
                oeabrleotr
                talsainpoa
                tde vndpnc
                est etaeee
                r t rbnrvl
                y e tltpee
                   ia ist
                   nd es
                   ee ce
                      el
```

Figure 4.2: Example of *socistat* social status analysis

4.2.3 Frequency distribution analysis

The Frequency Distributions, which are illustrated in *Excel* histograms (bar charts), have been produced in two different ways. The first produces a bar chart which includes '0' values, and the ascending scale of numbers of goods present (x-axis), is on an arbitrary basis, for example one, two, three and so on up to ten, then 15, 20, up to the maximum number of a given class of goods in any individual tomb. The second uses a logarithmic scale (x-axis) and does not include graves where the specified artefact type is not present. The increments run as follows: 1, 2 to 4, 5 to 8, 9 to 16, and so on, up to the maximum number present in any one tomb. This method also acts as a further means of compressing the data and helps to draw out patterns.

In addition to observing frequency distributions of artefact types and quantities on an intra- and inter-site basis, I am also looking to the distribution of types of graves (cf. Parker Pearson [1999, 123] on the relationship between burial modes and kin groups; cf. Carr [1995, 157] on the number of different burial types as one determinant of social organisation), bodily orientation, and potmarks and/or *serekhs*. I am also producing cumulative frequency curves, for comparison of total goods between sites and time phases. The latter may help in considering the number of gradients within a given society; however care needs to be taken when extrapolating from this kind of chart, and I refer to such potential problems in Section 6.2.3 (cf. Orton and Hodson 1981, 113). Frequency distribution analysis looks at overall distributions between and within the sites, and helps to build a picture of basic consistencies and inconsistencies within and between the sites. I will also focus on the association between artefact types and gender and consider the symbolism and ideology behind such associations, and also investigate the association between artefact types/materials and age (Mizoguchi 1992, 44).

The distribution charts allow me to consider the degree of inequality that is apparent: i) in terms of the MAO data, to see whether/how the distributions change over time; and ii) to see how all of the datasets relate to each other and what different patterns are discernible. In Chapter 3 I discussed the problematic issue of associating complexity, inequality, and heterogeneity (McGuire 1983; Paynter 1989; Yoffee 1993), and this section of analysis allows me to consider the apparent degree of inequality and heterogeneity/homogeneity

within the data. It is then for me to consider elements of temporal change and assess whether the link can be made with increasing complexity. The results can be considered on an inter-site basis, and it may also prove particularly revealing to examine the intra-site temporal data in the case of MAO, but we shall return to this in Section 6.2.3. In addition, it is important for me to bear in mind that prosperity may be seen to both increase and decline (Yoffee 1993, 71), and that aspects/attitudes of funerary ideology may also vary across time periods at and between given sites (Goldstein 1981, 56-57). The variation and diversity in distribution of types of artefacts (different materials) may be another means of considering changing access to resources, and from the results I can further investigate the reasons behind this change (Paynter 1989, 382; Spencer 1990, 6-7). The degree of distribution of new material/object types may be particularly pertinent, since it helps visualise whether access is limited to a very few individuals, or whether it appears more widespread. In turn, I would then question whether inequality is increasing, and whether it seems likely that the few are having to legitimise their position to the many, either within their own community/kin group, or to those from neighbouring regions. It is also important to remember Fried's (1967, 115) comments that leaders may be maintaining their position by acquisition of obligations from others, rather than obtaining and reinforcing their prestige through material acquisition. The question of whether power is increasingly falling to chiefs whose importance may be based on connections with central organisation rather than kin groups is important, however, and such a change may relate to both vertical and horizontal social divisions (O'Shea 1981, 41; Chapman and Randsborg 1981, 12); the latter might prove difficult to ascertain.

The consideration of the orientation and positioning of the deceased is also very important in terms of overall distribution patterns, since this is one of the suggested means of accessing changing 'philosophical-religious beliefs' (Carr 1995, 107). It may also be revealing in terms of horizontal social divisions, since elements of funerary ideology may be related to membership of certain kin groups and a greater conformity in orientation might suggest increasing integration between groups within the community. Similarly, orientation patterns may also be useful in identifying burial trends on a regional level, in terms of ideological cohesion (Castillos 1982, 174-176; Debono and Mortenson 1988, 46; van den Brink 1989, 79). The introduction of new patterns/traits, however, may

suggest influence coming, either directly, or indirectly, from outside the sphere of the community. It will, therefore, be interesting to see how such patterns alter in terms of homogeneity or heterogeneity across the period of state formation, and whether variation in burial position becomes more standardised; this will be discussed further in Section 5.3.1-2, Section 6.2.3, and the spatial behaviour considered in Chapter 7. While certain aspects of the mortuary ritual may well be more reflective of social organisation or funerary ideology, it is important to remember, as noted by Hassan (in prep.), that ideology is intrinsic within social practice. Ideology is manifested archaeologically through material culture and spatial patterning. It must also be borne in mind that the reflection of society that we perceive through the mortuary record/ritual, may be rather how the society saw itself and how it wanted to be seen, and not strictly how it was (Savage 2000, 86).

4.2.4 Bivariate analysis

In order to facilitate the bivariate stage of the analysis, each unit is being analysed in terms of three dual categories, as follows:

	[total number of grave goods
Wealth	[
	[total number of artefact types
	[distance scale (from possible origins of materials)
Effort	[
	[grave size
Acquired/	[sex
Inherited	[
Status	[age

The bivariate analysis approaches the data in a different manner, by considering the relationships between the categories of wealth, effort, and acquired/inherited status. This aims to inform in more detail the nature and, moreover, the expression of social differentiation over time. One key issue is the comparison of social development and differentiation between the sites, since this will allow for greater inferences into the

complexity of social organisation, visible differentiation, and possible similarities and/or differences in trajectory.

Spencer (1990, 6-7) notes that we may see more and different resources coming into the archaeological record if interaction between communities increases, and the bivariate analysis will also allow us to see firstly, if the presence of a wider range of artefact types (wealth) correlates with the size of the grave (effort) and also the distance from which the objects may have travelled; secondly, it will allow us to see what relationship these factors then have with the age and the sex of the individual (cf. Tainter 1978, 125-126). Hassan (in prep.) also utilises bivariate analysis in his assessment of grave good frequency during this period in the Nile Valley. His 'hypothetical assumption' (based on statistical analysis), is that tombs of 'Nobles' are not only associated with a large number of grave goods, but also large tombs, rectangular in shape, with a large number of 'precious objects' and, an exclusive cemetery (Hassan in prep.). While I am not concerned here with 'exclusive graveyards' (Hassan in prep.), rather more zones within cemeteries, I am nonetheless concerned with the varying ways in which it may be possible to weigh the social position of the individual, and specifically the variation amongst and between communities. The value of implementing additional variables by which to evaluate 'wealth' can be considerable, and in the evaluation of robbed tombs, for example (Section 4.4), it provides a number of additional means by which to assess the importance/role of the deceased. By implementing my bivariate approach, the chances of making realistic inferences about whether certain individuals may have been local chiefs or community headmen might increase. It will be useful, temporally, to see the degree of correlation between the categories of wealth, effort, and status, and whether and when we can rather observe distinct changes in these relationships, since this will allow scope for inference concerning social change.

In terms of heterogeneity, inequality and complexity, this type of analysis will allow for a number of insights. One such example might be whether the distribution of graves with a high number of types (as detected in frequency distribution analysis), bears any relationship to the size of the grave, or whether size is relatively homogenous despite variation in terms of actual grave contents. It also puts me in a better position to assess

the degree to which inequality is observable through changing attitudes to age and sex within the community. We do, however, have to take into account the research of MacDonald (2001) and Mizoguchi (1992) in terms of giving due consideration to the nature of the relationship between age and mortuary treatment. By considering grave contents and construction in conjunction with the bioanthropological data (where possible), I can make inferences about whether the contents and construction suggest privileged access to resources from birth, or whether age and ability constitute the baseline for achievement. In terms of sex, Johnson and Earle (2000, 126) note the possibility of female roles declining in ranked society, and Savage (2000, 91) also comments, from his research in the Nile Valley, that women seem to have 'a status greater than, or equal to men', but that the balance seems to shift with the rise of the centralised state. With regard to gender, therefore, it is vital to investigate changing relationships between the variables of wealth, effort, and acquired/inherited status, in addition to the results of previous sections of analysis that will inform regarding specific artefact association findings in terms of gender (cf. Hassan and Smith 2002).

4.3 Methods of approaching effort expenditure

For the bivariate analysis, I have deliberately chosen to include dual variables within each of the given categories (Section 4.2.4). This can act as a 'check' to ascertain the usefulness and reliability of these categories. For the variable of effort it might, therefore, prove enlightening to not only consider the effort expended on grave construction (cf. Tainter 1978, 125-126), but the effort expended on acquiring objects from various sources, effectively investigating the amount of influence or power that a given individual, or their kin group, may have had at their disposal. During previous analysis carried out on the material from KHD (Rowland 1998; Rowland and Hassan 2003, 419-420), a 'social value' score was included, for which I assigned point values for different artefact types/materials. The intention of this analysis had been to assess whether a grave containing a greater number of objects made of ceramics, for example, would have a higher or lower social value score, than a grave containing less objects, but objects nonetheless suggesting high status, for example copper. It is vital, however, to realise that the contents of the grave may reflect a combination of the wealth and the position of the deceased, and the esteem in which the individual was held by the society. A more

objective perspective might, therefore, be reached through considering the effort required to produce artefact types. Two such perspectives have been considered (although only one implemented): 1) the distance from the cemetery site to the source of the raw material, and 2) the effort/time required for the manufacture of each object. This approach can, at the very least, highlight whether certain individuals appear likely to have had privileged access to distant materials.

The second of these suggestions requires that the process of production be broken down into a series of steps, and graded by the number of steps taken to arrive at the finished object. This might include travel to the raw material source, acquisition of a rough-shaped piece of the material, shaping, and finishing of the object. Dependent upon the material and intricacy of the finished object, a different number of steps may occur. However, it was felt that for a relatively large number of objects a very similar number of steps might result, and that perhaps a more precise method might be to consider the actual person-hours involved in production. This data, however, might prove both difficult to obtain and still result in a rather subjective view. Consequently this approach was rejected. An additional problem with this approach includes the consideration of whether the object was made on or off site, where we do not have access to the archaeological evidence for a settlement or workshops.

Therefore, the 'distance scale' approach will be used, for which I will calculate the approximate distance from the closest source of a given raw material to the cemetery sites. This approach will provide an objective count for each grave, so facilitating comparison between graves. What must be taken into account, however, are the events by which the object came to be deposited in the grave. This raises a number of additional questions, which should all be borne in mind, even though finding answers might prove extremely problematic: did the object actually belong to the deceased in life?; was it inherited?; had the object come directly from its source?; or is the object's presence a result of down-the-line transfer?; and most importantly, does its presence help us infer whether the individual held a privileged position in terms of access to resources? Shortcomings to this variable are acknowledged, including the assigning of incorrect nomenclature to certain types of stones in the excavation records (Section 4.3.3), and I am

experimenting here on its value as a complementary variable to grave size as the single variable for considering the effort expended on the grave unit.

4.3.1 Calculation of the distance scale

The distance scale will be recorded in terms of the distance (in kilometres and shown in the bar charts as a 1-4 distance scale rating) between the site and a possible closest source of the raw material in evidence (Nicholson and Shaw 2000). I have measured distances 'as the crow flies', as opposed to the actual distance of land and water transport to a given resource. While I acknowledge that the distances will not provide the accuracy of actual distances via real ancient land or water routes, for analysing comparative differences between distances from the sites this method should prove sufficient. In cases where there are a number of different types of material present within the grave, then the distance will only be given for the object/material coming from the furthest source (although still given in terms of the closest source for that particular raw material). This said, however, I will naturally make additional comments relevant to specific instances of graves with multiple distance materials in Section 6.2.4.

4.3.2 Closest sources of raw materials

Table 4.1, below, comprises the information on which the Distance Scale analysis is based. A full listing, including the names of several close possible sources and details of chronological periods of usage are given in Appendix 3 for reference. This information has been based on Nicholson and Shaw's *Ancient Egyptian Materials and Technology* (2000), with additional information from Gale and Stos-Gale (1981), Hassan and Hassan (1981) and Shaw (2000).

Material / Distance (km)	KHD	KN	MAO	TIA	Co-ordinates of Nearest Source	Quarry/Locality
Alabaster	140	130	160	140	29° 42.5'N, 30° 53.0'E	Umm el-Sawann, NE Fayum
Amethyst	330	360	360	365	27°41'N, 33°9'E	Wadi Abu Had
Anhydrite	100	125	110	130	*no exact location*	*Gulf of Suez*
Basalt*	175	160	200	175	29° 39.6'N, 30° 37.2'E	Widan el-Faras, Fayum
Beryl (emerald)	625	635	660	650	24° 40'N, 34° 48'E	Wadi Sikeit
Chalcedony**	490	505	530	515	26° 21'N, 33° 18'E	Wadi Abu Gerida
Chert (flint, jasper)	100	75	115	100	30°04'N, 31°15'E	Nile Valley outcrops close to Cairo
Diorite (quartz diorite, gabbro)	395	420	435	435	27°9.1'N, 33°16.75'E	Wadi Umm Balad, near Gebel Dokhan
Egyptian Alabaster	180	175	200	190	29°04'N, 31°06'E	Beni Suef
Fluorospar	515	540	550	520	26°08N, 33°35'E	Umm Esh el-Zarga
Galena	535	555	560	565	26°0 65'N, 33°36.4'E	Bir Umm Fuwakhir
Garnet	520	545	550	550	26°07'N, 33°04'E	Gebel Metiq
Gneiss***	860	875	890	995	22°47.5'N, 31°12.7'E	Gebel el-Asr, Nubian Desert
Granite	725	740	760	760	24°3.7'N, 32°53.7'E	Aswan (between Aswan and Shellal)
Granodiorite	535	555	560	565	26°0.65'N, 33°36.4'E	Bir Umm Fuwakhir
Haematite	320	340	345	345	27°55'N, 33°18'E	*Wadi Dib*
Limestone	95	85	115	110	29°50.9'N, 31°9.9'E	Saqqara
Limestone Breccia	115	115	145	125	no exact location	sporadic - as far north as el-Minya
Malachite	220	265	260	260	28°54'N, 33°22'E	Wadi Maghara
Marble	165	185	195	195	25°17.95'N, 33°57.85'E	Gebel Rokham
Mica	710	720	740	740	24°40'N, 34°49'E	Gebel Sikait
Microline (amazonite)	620	650	655	655	25°16'N, 33°56'E	Wadi Higelig/Gebel Migif
Olivine (peridot)	840	855	875	875	23°39'N, 36°10'E	Zabargad
Porphyry	395	425	430	430	27°10.2'N, 33°14.4'E	Wadi Umm Towat, near Gebel Dokhan
Quartz	330	360	360	365	27°41'N, 33°9'E	Wadi Abu Had
Quartzite	85	75	110	100	30°3.15'N, 31°17.8'E	Gebel Ahmar
Sandstone	530	560	570	565	25°56.7'N, 32°33.8'E	near el-Muweih on Qift-Quseir Road
Serpentinite (serpentine)	525	550	555	560	26°3.9'N, 33°6.6'E	Wadi Umm Esh
Siltstone (greywacke, congl)	540	560	570	575	25°59.4'N, 33°34.05'E	*Wadi Hammamat*
Steatite (soapstone)	635	665	670	670	25°5.75'N, 34°4.25'E	Gebel Rod el-Barram
Turquoise	225	270	260	265	28°54'N, 33°22'E	Wadi Maghara
Copper	215	265	255	260	29°02'N, 33°28'E	Serabit el-Khadim
Gold	635	655	660	650	25°00'N, 33°19'E	near Kanayis
Silver	530	560	570	565	no exact location	Possibly Eastern Desert Sources
* amphibole						
** agate, carnelian, chrysoprase, citrine, onyx, sardonyx, silicified wood						
*** anorthosite and diorite-gabbro gneisses						

Table 4.1: Mapped sources for raw materials

4.3.3 Note on material terminology

There are a number of problems when it comes to both identifying and naming raw materials. Here, I wish to highlight a few key terminological problems, and to state how I am dealing with these issues in terms of my data analysis. I have consulted *Ancient Egyptian Materials and Technology* (Nicholson and Shaw 2000), and have also consulted further references in the literature. *Siltstone* is one of those terminological problems with

which we are faced. Further to Aston *et al* (2000, 58) *siltstone* may be used in place of the terms schist and slate. She notes that 'the so-called "slate" palettes of the Predynastic period are actually of siltstone' (Aston *et al* 2000, 58; cf. Kroeper 1996, 72; Klemm and Klemm 1993, 369; cf. Hendrickx 1994, 130). Furthermore, Aston *et al* (2000, 58) comment that 'schist' is also an 'erroneous' name applied on occasion to siltstone and greywacke. Klemm and Klemm (1993, 368) note that the exact petrographic name should be prefixed by 'meta', for example meta-siltstone, although they comment that this prefix is commonly omitted in geological 'Umgangssprache' and that they would propose the use of the simpler petrographic notation. I will, therefore, be using the nomen siltstone.

On the subject of *alabaster*, Aston *et al* (2000, 59) note that what is commonly referred to as *alabaster* or indeed, *Egyptian alabaster*, is invariably *travertine*. Hassan (*pers comm.*), however, states that in geological terms, *Egyptian alabaster*, is not *travertine*. *Travertine* is a deposit found by springs, which can be identified by such features as leaf impressions. It is a recognised fact that *Egyptian alabaster* is composed of *calcite*, as opposed to true *alabaster*, which is predominantly composed of *gypsum* (Hassan *pers comm.)*. There is thus considerable debate in the literature over the correct term to employ for this material. Harrell (1990, 40) discusses this matter in some depth and notes that we cannot use the term *alabaster* since this is 'well established in modern petrological nomenclature as a name for a variety of gypsum'. In so far as using the term *Egyptian alabaster*, this is only regarded as 'somewhat more acceptable', mainly because it suggests 'something other than true alabaster, at least to Egyptologists and others who deal with ancient Egyptian artifacts', although the problem remains in that this term may still be misleading to everyone else (Harrell 1990, 40). While some researchers use the terminology calcite (Lucas and Harris 1962, 391) or calcite-alabaster (Klemm and Klemm 1979, 107-108, see below also), Harrell (1990, 40) argues that *calcite* is a mineral and not a rock name, and thus is inappropriate. His conclusion, therefore, is that the 'so-called "Egyptian alabaster"' should be referred to as "travertine", "Egyptian travertine", or for preciseness "calcareous sinter (or calc-sinter) travertine" (Harrell 1990, 41). Harrell's (1990, 41) final word on the matter is that because *Egyptian alabaster* has become such a widely used term within Egyptology, that to ensure clarity of terminology we may use

travertine with *Egyptian alabaster* in parentheses, but not with *alabaster* in parentheses. One year after Harrell's comments were published, Klemm and Klemm (1991, 60) raised the issue once more in a technical discussion, but concluded only that in their opinion,

> 'Wir schlagen deshalb vor, das in Frage stehende Gestein in der Ägyptologie mit berechtigtern stolz und kleinlichen petrographischen Einwänden zum Trotz als **ÄGYPTISCHEN ALABASTER** oder, falls man die mineralische Zusammensetzung betonen möchte, auch als **CALCIT-ALABASTER** zu benennen',

To translate in summary, they recommend that we either employ the term *Egyptian alabaster*, or if we would like to stress the mineral content, then we may also use the nomen *alabaster-calcite.* The nomen *Egyptian alabaster* is also the common usage term by Egyptian geologists themselves (Hassan *pers comm.*), and I will be using this nomen throughout.

4.4 Plundered tombs

In Section 3.2.1, I have already raised the problem of our potential lack of knowledge concerning the funerary ritual, since the archaeological remains predominantly comprise the grave units. However, a further problem is how to deal with the problem of robbed tombs. The possibility of utilising plundered tombs within analyses depends on the degree to which robbing has occurred in a grave unit, what other indicators of wealth and status we might have beyond the actual grave goods, and the overall extent to which a cemetery has been plundered. In the case of Armant cemeteries 1300 and 1400-1500, although the cemetery had been robbed, a large number of grave goods still remained (Castillos 1982, 15). Castillos (1982, 15) notes in this case that it is possible to use such data, and it seems most likely that certain materials such as metals and precious stones were targets for the robbers (Castillos 1982, 15; Mallory-Greenough 2002, 75; Rowland in press a). Castillos (1998b, 27; 1998c, 28-29) also notes that in general the material he has analysed from Predynastic cemeteries does not suggest that plundering is particularly frequent; to further stress his point that we can still use the material, he compares the results of analysis carried out where the intact tombs alone are analysed, and then where the violated tombs are added to the analysis, his results show great similarity. There are also instances in which 'wealthy' graves are distinct, even following their robbery. One such example for this analysis are the eight plundered tombs of the 'elite' at Minshat Abu

Omar, which have also been subjected to statistical analysis by Kroeper (1992, 139-140). Although objects have been removed from these tombs, Kroeper (1992, 140) stresses rather that a large number of grave goods remain, thus we do not lose the differential between more wealthy and poorer burials in terms of totals of grave goods. Also, at Tell Ibrahim Awad, van Haarlem (2000, 15) notes of one of the Dynasty I tombs, that despite its plundering 'a lot of objects (stone and pottery)' remained. At Kafr Hassan Dawood, however, there is evidence of a robbers' trench being dug into the large tomb 970, but we do not have evidence for widespread looting of the site (Hassan 2000a, 37).

For such reasons as those discussed above, it has been judged appropriate to include robbed graves within the current analysis. Furthermore, in agreement with Castillos (1998c, 28), who noted that wealth 'complements the physical effort used in digging the graves', the dimensions and type of the graves are being considered alongside the contents as a further indicator of differentiation (cf. Tainter 1978, 125-126; Griswold 1992, 194).

4.5 Summary

The methods of data analysis outlined in this chapter are intended to provide a number of differing, but overlapping, approaches by which to explore the mortuary evidence. My analyses in Chapters 6 and 7 utilise them to explore:

- Associations of artefacts, and groups of artefacts; commenting upon potential functional groups and symbolic associations (taking gender and age into account) (*jaccard*)
- Differences both within and between sites in terms of the results of the above (*jaccard*)
- The potential difference in importance between different artefacts/materials within the grave good assemblage, as a means of enquiry regarding inequality and hierarchical division within the community (taking gender and age into account) (*socistat*)
- The distribution both of artefact types, totals of goods (and the variation and diversity of this), and modes of burial to examine the apparent degree of differentiation both

between and within sites (taking gender and age into account) (*Frequency Distributions*)

- Differentiation between temporal phases to examine the extent of heterogeneity/ inequality that can be seen between and within sites and consider this in relation to the degree of complexity within the community (*Frequency Distributions*)
- Changing attitudes in terms of funerary ideology *(Frequency Distributions*)
- The relationship, and changes within this relationship, between wealth, effort and acquired/inherited status, and observations concerning a) what each of these might reflect in terms of ideology and social differentiation, and b) the degree of similarity between each of the dual components (*Bivariate Analysis*)
- The manner in which social position is legitimised through the funerary ritual, and whether this becomes apparent at a particular juncture (*Bivariate Analysis*)
- The degree of zoning within the cemetery and the factors on which this spatial distinction are based (*Bivariate Analysis* and *Spatial Analysis*)

The next chapter deals with the second section of my methodology, which investigates expectations for the distribution of mortuary behaviour throughout Egypt and into the Sudan.

5 Evaluating Expectations for the Regional and Temporal Distribution of Mortuary Behaviour

5.1 Methodology II: Literature survey

I conducted a literature survey on a sample of Neolithic, Predynastic and Early Dynastic mortuary sites throughout Egypt and the northern Sudan. I have chosen this approach as a means by which to evaluate early Egyptian mortuary behaviour in wider temporal and spatial dimensions. This survey makes no claim to be absolute, but is rather based on the published data from a sample of sites in order to examine trends and differentiation within the funerary record.

The data collected from the survey are intended to test the hypotheses that I have formulated in view of past research:

- Social differentiation appears to be exhibited through the mortuary record earlier in the Nile Valley than in Lower Egypt
- Age and sex affect differential mortuary treatment and distribution in different spatial locations
- The Early Predynastic (Neolithic) mortuary evidence in Lower Egypt displays different cultural traits to the evidence in Upper Egypt
- Different modes of inhumation, for example orientation, exhibit uniformities on a regional basis in the Early/Middle Predynastic and wider geographical uniformity from the Late Predynastic onwards
- The relative representation of social differentiation through burial practice becomes more uniform, geographically, by the Late Predynastic

These hypotheses are intended to help define a) socio-political variation within the wider geographical context in the Neolithic, Predynastic and Early Dynastic, b) the dynamics behind temporal and geographical variation, and c) the gradual increase in interaction between Lower and Upper Egypt, culminating in the formation of the unified state of Egypt.

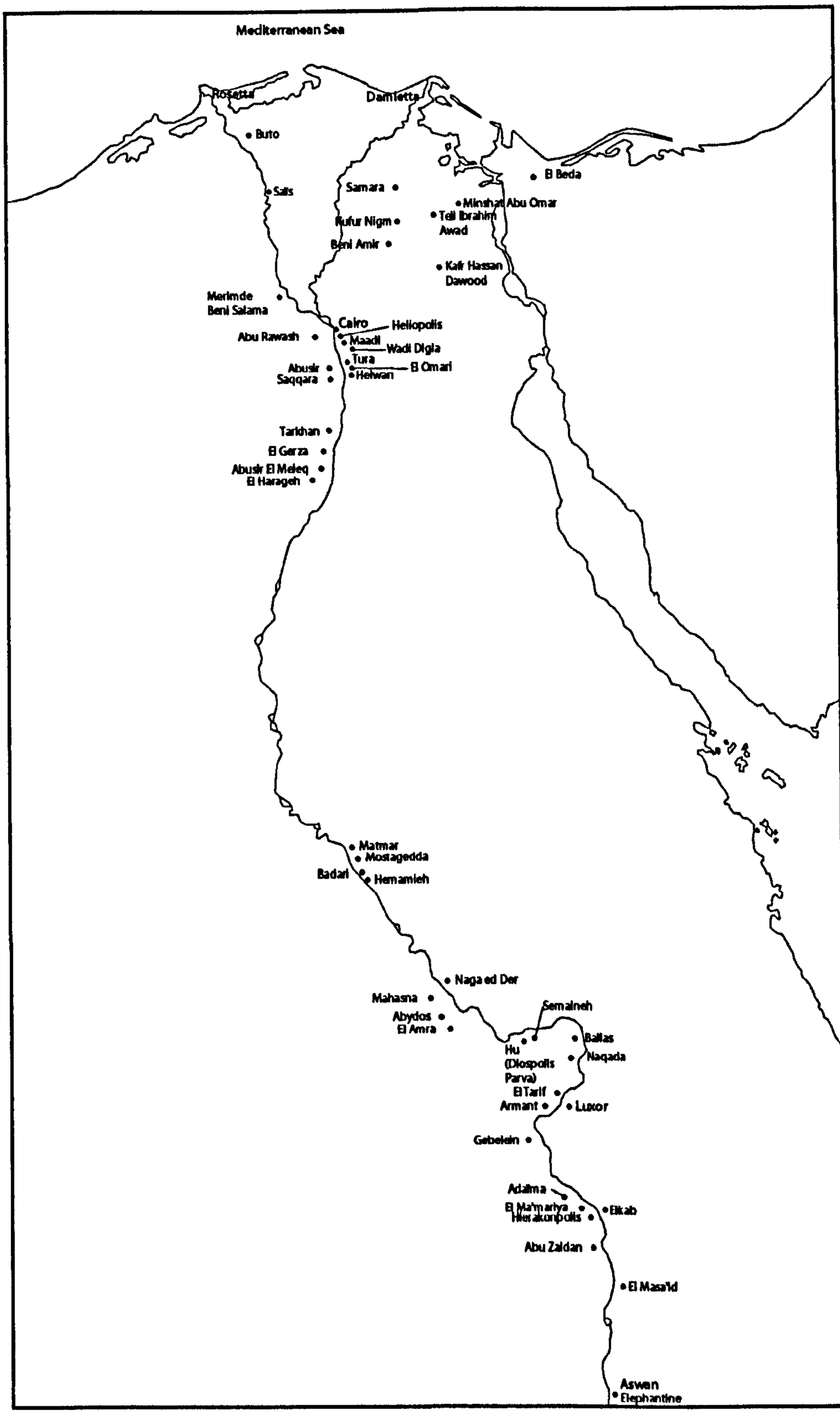


Figure 5.1: Map of Egypt, including sites mentioned in text (redrawn after Mortenson 1999, 20-24, figs. 2-4)

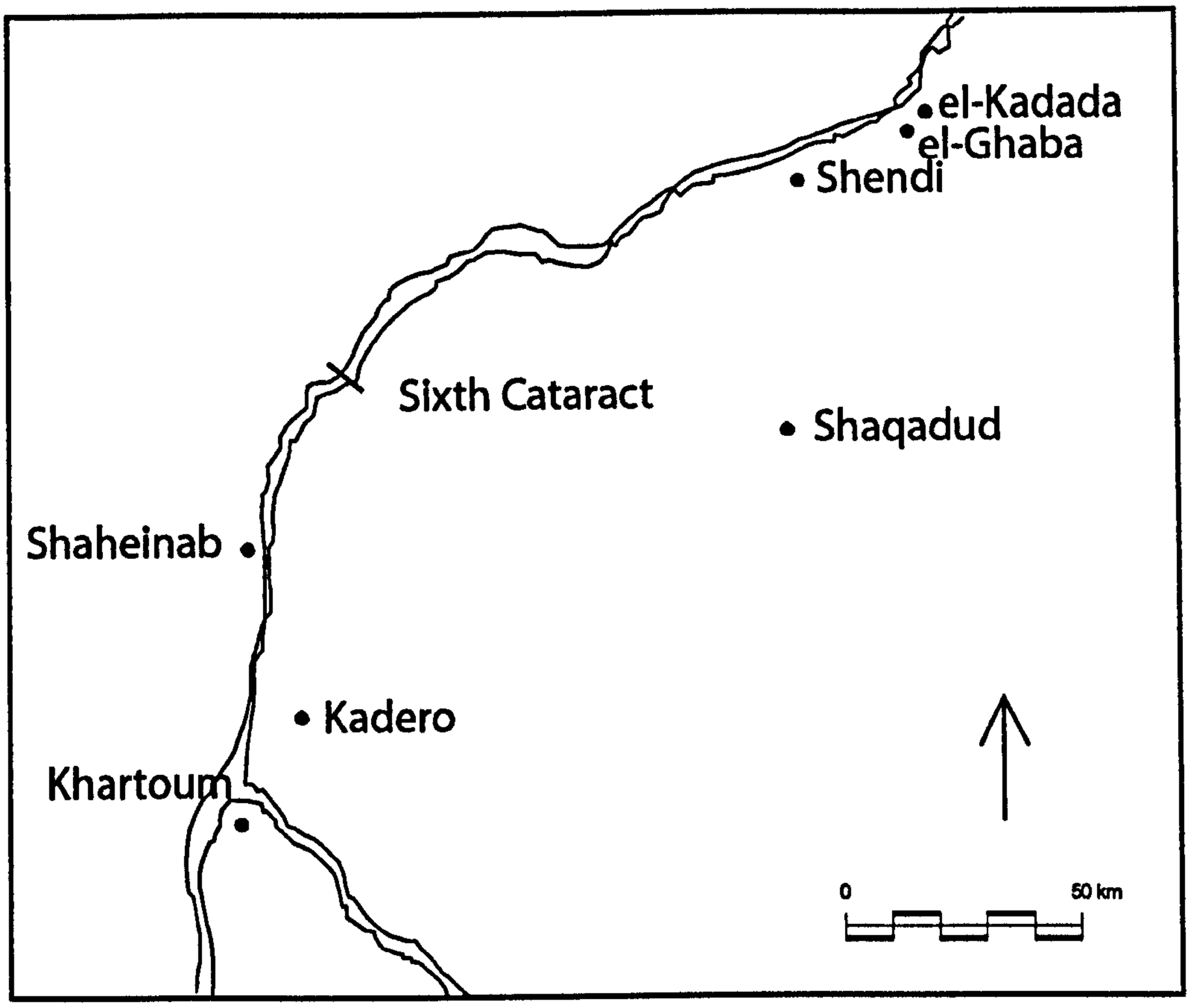


Figure 5.2: Map of Sixth Cataract region of Nile Valley, including sites mentioned in text (redrawn after Midant-Reynes 2000, 268 map 4)

5.1.1 Organisation of the literature survey

The fundamental aim of this survey is to establish a solid basis from which to consider broader issues of social organisation and ideology during the Predynastic and Early Dynastic period. I surveyed the literature on a range of mortuary sites throughout Egypt, and into the Sudan. The temporal spread is from the Neolithic and Early Predynastic until the Early Dynastic period. I organised my data 'collection' so as to facilitate a synthesis of these sites, with a view to establishing the changing nature of social organisation and ideology in a wider geographical context, both in the period immediately preceding, and the period within which my research is based. The categories of information with which I am concerned are listed below:

- Site name
- Location (co-ordinates and geographical description)
- Period (according to the excavator(s))
- Current chronological synonyms
- Radiocarbon dates
- Size of the site
- Identity of the site (details of settlement and/or cemetery remains)
- Extent to which the site has been excavated
- Robbing (whether the excavation reports/literature make reference to areas that have been robbed at any point during the site's history)
- Materials. A list of the different types of materials/artefacts present at the site, and, where possible whether the material comes from certain settlement or mortuary contexts.
- Imports (where there is evidence provided for imported material)
- *Serekhs* (including the name of the individual ruler where it has been deciphered)
- Botanical and faunal remains (species attested from the evidence)
- Graves. A brief description of the number of graves in the cemetery(ies), and brief description of types of graves and classes of graves (where detailed by excavator)
- Orientation/Flexion. Details concerned the positioning and the orientation of the interred

- Multiple/Secondary. Any evidence for the presence of multiple or secondary interments
- Disarticulation (evidence for the skeleton being disarticulated)
- Age/Sex Distribution. Bioanthropological details, where available
- Differential mortuary treatment. A brief description of observed differential treatment, for example use of coffins, differences in grave architecture, or any details of spatial differentiation through zoning

5.2 Evidence for social differentiation and ideological change in mortuary contexts: when, how and where?

We might expect to witness increasing evidence for social differentiation within cemetery sites throughout the Predynastic and into the Early Dynastic, and it can also be reasonably expected that the kin groups, on which communities were initially organised, became less influential as regional centres increased in importance, and a centralised state emerged (Section 3.2.1 and 3.3). We might additionally expect the mortuary evidence to reflect increasing competition necessitating the need for legitimisation through mortuary remains and privileged access to goods commensurate with increasing external contact and involvement in centralised organisation. This might be expected to occur initially in Upper Egypt, where we have earlier evidence for an increase in the size of political units.

Within mortuary contexts social differentiation and ideological change may be expressed through the following media:

- The content of the graves
- The construction of the graves
- The spatial distribution of graves within the cemetery

Even with such details, it may prove problematic to identify whether mortuary differentiation might be suggestive of egalitarian, ranked or stratified society, or indeed, transitional stages between these. Indicators of egalitarian society might be detectable through the general lack of differentiation in graves, with the possible exception of some differentiation in size and the burial of personal items, which may suggest a small number of individuals holding temporarily elevated positions in times of need (Johnson and Earle

2000, 44). However, that positions are reflected through differential burial might also suggest their longevity, which indicates at least a temporary change to ranked society. Other pointers that might indicate ranked society include the presence of a higher quantity of grave goods with some older individuals who have acquired a certain position within the society, or who have had a greater number of dealings outside of the local community. Greater external contact might be reflected in the possession of a slightly wider variety of types within the grave, and this, moreover, suggesting the presence of a competitive dynamic within the community; a need for a kin group to emphasise its standing through the mortuary treatment of an important individual. Pointers that might be suggestive of stratified society (representing inherited wealth and/or status as opposed to acquired) might include a greater number of grave goods accompanying the burials of young children, and young adults, and a higher number of larger graves containing both greater quantities of objects and greater variety in type. Less overall inequality may also be observable as increasing numbers of positions reflect different rungs on the hierarchical ladder (cf. McGuire 1983, 109).

Increase in social differentiation is likely to be reflected through the grave contents, size and spatial position, although it must be stressed that ethnographic studies (including David 1992) prove that there are aspects of the funerary ritual that express the status of the individual, yet are not preserved in the mortuary record. The Lake Chad Basin example cited by David (1992, 198) states that an individual's prestige can be shown in the ability of the deceased to 'mobilize' drink, food and guests for the wake and that these 'constitute the main forum for the display and reinforcement of status, rather than the burial and gravegoods'. Ideology and patterns of belief are embedded within the society and, hence within the mortuary ritual. Taking heed of this warning, it is notable that: 1) variation in grave contents, both in terms of variety of artefacts and quantity of artefacts may well provide evidence for social differentiation; 2) a wider range of types of graves might be represented, giving evidence for different scales of input for grave construction, in terms of effort and organisation; and 3) there may also be changes in the spatial zoning of graves, which may reflect sub-groups of society, including kin groups.

5.2.1 Trends in burial evidence

It is apparent from the evidence collated from the literature survey that a degree of differential treatment is visible in cemeteries from the Early Predynastic period onwards in Lower Egypt (often termed 'Neolithic'), and during the Badarian period in Upper Egypt.

At the site of el-Omari (4600-4400 cal BC, Mortenson 1999a, 592), the earliest Lower Egyptian 'Neolithic' site, the shallow oval burial pits appear to have been dug in abandoned areas of the settlement, with an intentional zoning of male and female/child burials (in Area A), with the majority of male burials located in the west and female/child burials in the east, and no baby burials. Whether the pits were dug purposely for burial, or were re-used pits is unclear (Midant-Reynes 2000, 122). In terms of any further differentiation in burial at el-Omari the evidence is limited, and grave goods are rare (usually only a single pot being associated with a burial) (Midant-Reynes 2000, 122). In light of his ethnographic research, however, David (1992, 198) comments that grave goods might well be scarce if a society held little 'social surplus'. One burial at el-Omari was found where the deceased male was holding a stick, subsequently observed as phallus-shaped and, therefore, possibly representative or symbolic of power or magic, and one child's grave was furnished with ibex horns and another's was covered in flowers (Midant-Reynes 2000, 122). Hoffman (1980a, 196) noted that Childe (1952, 40-41) considered this male burial to represent a local ruler, and he himself conceded that this might mark the start of 'those social differences that would later become a hallmark of the highly class-conscious Egyptian society'. However, the evidence from el-Omari does not fit comfortably within the definition of hierarchical differentiation, with only ideological factors attached to the zoning of burials and the style of graves. The possibility exists that the differentiated adult male grave represents a 'big man' or 'elder/chief' and that we are witnessing minimal burial differentiation within a low-level ranked society.

At the Neolithic site of Merimde Beni Salama in Lower Egypt (c. 4750-4250 cal BC, Eiwanger 1999, 501, 505) burials of adults and children have been found; children have been placed within rubbish pits, and adults (predominantly females) buried within the settlement area, there being no spatially distinct cemetery. However, it should be noted

that the settlement need not have been simultaneously used for living and burial (cf. Midant-Reynes 2000, 117). The interred were wrapped either in matting or animal skins with no grave goods and no difference between the graves suggested, other than the inclusion of fresh water mussel shells with the earlier burials, but not the later ones (Eiwanger 1999, 501). Hassan (1988, 169) raises an interesting interpretation for the lack of adult male burials, and suggests that this is indicative of matrilineal lineage and the passing of power from female to child (cf. Savage 2000, 89-90). Due to the site largely lacking male burials, it is more difficult to consider whether there was ranking within this society, since if the local chief/headman was male, and buried off site, then we do not have access to the evidence.

The Neolithic period in Lower Egypt is partially contemporary with the Badarian period in the Nile Valley (Early Predynastic). Radiocarbon dating places the latter to a period between 4500-4000 BC, with dates concentrated between 4400-4000 cal BC (Hendrickx 1999a, 19; Holmes 1999, 162), while the two thermoluminescence dates from Hemamieh for the Badarian are 5535 ± 290 BC and 4660 ± 290 BC (Hassan 1985, 106-107; cf. Hoffman 1980a, 142). In the 1930s Brunton (1937; 1948) excavated Badarian settlements and cemeteries in the areas of Matmar and Mostagedda. In the region of Matmar and Mostagedda most Badarian burials comprised simple oval pits, with only a very few rectangular graves (Brunton 1937, 43; 1948, 9; Holmes 1999, 162). The grave goods accompanying the deceased were simple, with a single pot usually found, and on occasion flint tools or a siltstone palette, necklaces of stone beads and shells (Brunton 1948, 10-11; Holmes 1999, 162). In the early Badarian period at Matmar cemetery 2500, the larger graves are associated with females (Brunton 1948, 9; Baumgartel 1974, 469) and in the later Badarian, at cemeteries 3000/3100, males occupied the largest graves, and Murray (1956, 87) notes that there were areas within the cemetery reserved for male burial. The Badarian burials are distinct from their northern contemporaries in that they occupy an area spatially discrete from the settlement and incorporate more resources within the funerary ritual. The expression of social differentiation through the mortuary remains might suggest elements of ranked society, and the fact that larger graves were earlier accorded to females, and later to males, possibly suggests that earlier social differentiation was matrilineal based, and that later differentiation might represent the

emergence of patrilineal society (cf. Hassan 1988, 169; Savage 2000, 89-90). The low quantity of larger graves present also suggests that we are looking at individuals assuming roles of greater importance, a ranked society, but not stratified. The evidence from this region highlights key differences within the funerary ritual in Upper and Lower Egypt, and there appears to have been some impulse causing Badarian funerary ideology to develop along a different trajectory to that of the Neolithic north.

Moving south into the Sudan, mortuary differentiation is visible at the site of Kadero, a site associated with the Central Sudanese Neolithic Tradition. Kadero has three clusters of burials located outside of the settlement areas (calibrated averages of 4015 ± 35 BC and 4330 ± 95 BC, Hassan 1985): in the first, the northeastern cluster, there is one zone containing a mixture of male, female and child burials, and a second zone with only male and child burials (Krzyżaniak 1984, 313-314). Prominska (1984, 327-329) notes that the sex distribution of adults is 69.2% males and 30.8% female, and that the overall distribution of children is 29.7%, but adds that one reason for the majority of adult males within the distribution may be the poor preservation of child skeletal remains and a separate (and unlocated) area of burial for women dying in childbirth. The site provides further evidence for social differentiation in terms of grave provisioning, with the second, the central cluster, and the third cluster close to the northern settlement (adults and children of both sexes) containing very few or no grave goods, and the burials in the northeastern area, all richly furnished (a cluster of nine graves of adults and children of both sexes, and a cluster of five graves of adult males and children) (Krzyżaniak 1984, 313). In the larger of the two clusters, one burial stands out, that of a 45 year-old male, which in addition to high quality ceramics and carnelian beads and pendants found in the other graves within the cluster, contained a macehead (Krzyżaniak 1984, 313). It is apparent that there is social differentiation at Kadero which is reflected in the burial record: two broad social divisions (poor/rich), and the occurrence of this one male burial distinguished from the others by a macehead. All the burials in the rich group have a similar level of provision, and that this group comprises adults and children of both sexes (although one cluster is of only adult males and children) may suggest inherited wealth for children, which can be associated with stratified society, although, it may also be a reflection of grief (see Section 3.3; cf. Mizoguchi 1992; MacDonald 2001). The small

number of burials being considered here makes me reluctant to view this as a stratified society, since these groups of burials are small enough to be single family units. In addition, the burial with the macehead is of a relatively mature member of the community, who could be interpreted as a local merit-based chief whose position has been acquired through age and experience. However, that different levels of differentiation are observable within these groups, and that the burials are zoned, points in favour of a degree of stratification within the society.

Moving back into the Nile Valley, we can consider the burial evidence for the Middle to Terminal Predynastic from the site of Armant. While there is evidence for the Badarian culture at Armant, in Upper Egypt, the burial evidence is dated to Naqada IC-IIIA2 (c. 3900-3300 BC) (Hendrickx 1996, 38-43). Differentiation is observable from the earliest graves in cemetery 1400-1500 (Naqada IC and IIA), which consist of small roughly oval pits within a densely populated area in the south of the site (Bard 1999, 143-144). By Naqada IIB there is a group of larger rectangular graves in the north of the site, occupying a less densely concentrated area, with smaller oval/round graves, closely spaced with the Early Predynastic oval pits in the south (Bard 1999, 144). Finally, during Naqada IIIA larger rectangular graves are sparsely distributed within one area to the far north, and in the eastern cemetery (1200), two multi-chambered brick-lined graves (1207 and 1208) contain a great variety and quantity of grave goods (Bard 1999, 144). Castillos (1982, 29-30) notes that only four individuals placed in round graves have been sexed, two children and two female adults, from which little can be inferred. However the bioanthropological data obtained from the rectangular graves suggests that although larger graves are more often associated with male adults, the provision of grave goods is marginally higher for women than for men, and very low for children, with only one child's tomb classed as rich, with over ten objects (as opposed to four male and four female tombs). Bard's (1999, 144) view is that there is only a basic differentiation between two hierarchies (poor and rich), determined by the number of pots and grave size, and that as the site developed temporally, more resources were channelled into burial. Hendrickx (1989; 1996, 52) employed spatial analysis to discuss whether the distinction between related groups of graves is based both on contents and spatial distribution within a cemetery; he found this methodology to be successful. The spatial distribution of the graves at Armant can be

seen as an important marker, with the larger Naqada IIB graves spatially distinct from their smaller counterparts, and the location of tombs 1207 and 1208 suggesting an elite group in the eastern cemetery (Bard 1999, 143). The size, contents and location of tombs could be interpreted to suggest hierarchy, with an emerging social elite at Armant by Naqada IIIA (cf. Bard 1999, 144).

In Lower Egypt the Predynastic cemetery at Heliopolis shows definite signs of differentiation through mortuary remains. The site is contemporary with Maadi, for which the radiocarbon average for the settlement is given as 3900-3400 cal BC (Hendrickx 1999a, 20) and contemporary with the Naqada I and IIA-B periods in Upper Egypt, and Mortenson (1999c, 367) dates the cemetery at Heliopolis to between c. 4000 and 3500 BC (non calibrated). As with the Neolithic sites, the interred are placed within simple oval pits, varying in size and depth, but there is no evidence for the burial of infants or neonates. Similarly to el-Omari, zoning is visible within the burial areas, with an area for older children and an area (mainly consisting of female burials) with no grave goods (Debono and Mortenson 1988, 40). Similarities to the Neolithic persist with the wrapping of the body and lack of attention to grave goods, although as Midant-Reynes (2000, 217) illustrates, it is possible to break the burial types down into specific groups in terms of grave goods, body treatment, and age at death. These groups are distinguished by: 1) adults with no wrapping and few/no grave goods; 2) adults wrapped in matting or animal skin, possibly with a roof to their grave and few grave goods; 3) adults wrapped, with many grave goods; and 4) children sometimes with grave goods, but never wrapped (Midant-Reynes 2000, 217). At Heliopolis the burials are no longer situated in (abandoned) settlement areas, rather they occupy a separate piece of land, as is the case at Maadi and Upper Egyptian sites. The four potential categories of burial at Heliopolis suggest only limited social differentiation through the burial record. Debono and Mortenson (1988, 38) note that children are either accompanied with no grave goods, or a single pot, which does not suggest inherited wealth. The richest graves of adults have approximately ten ceramic vessels, with a few occurrences of siltstone palettes and stone vessels, and rarely, Palestinian imported vessels. The evidence suggests a largely egalitarian society, a society either not in a position, or not finding it necessary, to make a statement of their social standing in life through the medium of burial.

There is one cemetery associated with the Maadi settlement, Maadi South, and in close proximity to this is the Wadi Digla cemetery. The Wadi Digla cemetery is divided into two stages, Digla I and II; the earlier (Digla I) more comparable to that from the Maadi settlement, and the later (Digla II) having material culture more comparable with Heliopolis (Rizkana and Seeher 1990, 65). The Digla I cemetery is contemporary with the second half of the Naqada I period, and Digla II with Naqada IIA/B-IIC/D (Hendrickx 1999a, 20). The graves of the Maadi South and Wadi Digla cemeteries contain very few grave goods, with 50 per cent of the graves provided with no goods whatsoever, and the richest grave containing eight ceramic vessels (Rizkana and Seeher 1990, 28, 76). Graves of male and female adults suggest an association of different types on the basis of sex (Rizkana and Seeher 1990, 27; see Chapter 6). It is rare to find valuable non-ceramic objects in the graves of the Maadi cemeteries, and in the Maadi South cemetery the size and depth of the graves do not reflect a difference in the social standing of the interred expressed through number of grave goods (Rizkana and Seeher 1990, 23, 28, 76). The use of 'simple' funerary pottery is seen as an indicator that the Lower Egyptians did not feel that they had to bury their dead with special funerary objects, unlike their southern counterparts (Rizkana and Seeher 1990, 23, 78; Seeher 1992, 230). By the time of the abandonment of Maadi (Naqada IIC), however, there does appear to be a heightened concern with the provision of grave goods in Lower Egypt.

One of the main problems in determining the nature of social organisation from these cemeteries is the lack of bioanthropological data. Debono and Mortenson (1988, 40) comment that 'Determination of the sex and age of all the adults would have helped to give a more detailed analysis of the burial customs', and Hoffman (1980a, 210) bemoans the lack of proper anthropological investigation at Maadi. The mortuary evidence suggests minimal social differentiation, and notably a society where resources are being fed back into the economy as opposed to being displayed through grave wealth. This also implies a lack of competition to obtain and/or reinforce social positions, competition that might in turn reflect social position through the funerary ritual. Seeher (1992, 232) proposes that the influence of the Naqada culture resulted in the Lower Egyptians changing their approach to social differentiation as expressed through burial.

From the Late Predynastic onwards, the visibility of social differentiation through burial practice is distinct at Kafr Tarkhan, (opposite the entrance to the Fayum) and Tura (Lower Egypt), both presenting a wide range of grave sizes, quantity and variety of grave goods, and zoning of burials (see also Section 3.3 for Ellis on Kafr Tarkhan). The western end of the 'valley' and southern end of the 'hill' cemeteries at Kafr Tarkhan contain the highest status burials at this site, dating to the Late Predynastic ('valley': Naqada IIIA2-IIIC1, c. 3300-3000 BC,'hill': Naqada IIIC1-IIIC2, c. 3100-2900 BC) (Hendrickx 1996, 62; Ellis 1999, 390). These burials are clustered and distinguished by the size of the grave and the variety of artefact types (including stone vessels, palettes and beads) and there is evidence of multi-chambered tombs, and some subsidiary burials (Ellis 1999, 389-390). In his statistical analysis of Kafr Tarkhan, Ellis (1992, 252) revealed that the graves of adult females displayed the highest number and variety of artefacts, whereas the graves of largest volume are those of male adults, although he adds that artefacts may not have been 'the predominant form of material expression of status or wealth differentiations' in male funerary ritual at Kafr Tarkhan. This brings us back to the point that David (1992, 198) was trying to highlight, that social distinction may not always be reflected in the burial record, and Ellis (1992, 253) suggests that wealth expressed through agriculture and cattle ownership in life may have been the major distinction for males, a distinction that may not have been 'transposed into material (artefactual) wealth'. In contrast, it is interesting to note that tumuli are associated with cattle-wealthy Saharan Pastoralists, from 4000 BC. While the majority of these tumuli are known not to contain a great number of grave goods, significant effort has been put into the construction of these stone monuments, and their existence is considered to be a reflection of ranked or even proto-hierarchical social organisation (MacDonald 1998, 81, 85). Ellis (1999, 390) makes reference to 'Spatially discrete' areas, which he believes may have been used 'by subgroups in the society for status distinctions' and he compares the high status areas at Kafr Tarkhan to Cemetery T (an elite cemetery) at Naqada, with the emphasis on showing what he refers to as a 'symbolic use of space'. The Kafr Tarkhan cemetery reflects a substantial change in social organisation reflected in the mortuary record in Lower Egypt. The objects in the graves, together with the use of space, suggest a changing approach to funerary rites with a wide variety of grave goods

present, including ceramic and stone vessels, siltstone palettes, ivory cosmetic spoons and kohl sticks, beads, bracelets, and copper chisels, knives, and adzes (Ellis 1999, 390).

In the Sudan the Shaheinab Neolithic (c. 3599-2700 BC, Hassan 1986a) succeeds the Khartoum Neolithic, and there is evidence for mortuary differentiation within four distinct burial areas, cemeteries A to D, at the site of el-Kadada (Midant-Reynes 2000, 227). Multiple burials are considered to be common in each of these cemeteries and it is suggested that they represent sacrificial human victims, with the evidence pointing to the victim and the grave owner being buried at the same time (Midant-Reynes 2000, 227-229). Midant-Reynes (2000, 228) proposes that the primary inhumation was made in the centre of the grave with the sacrificial victim placed among the grave goods, and she notes the later burial of a family or clan member stratigraphically above the primary interment. A new attitude to funerary provision appears to be present, with the provision of grave goods including pottery, hard stone tools, palettes and pestles, lip-ornaments, ivory and Red Sea shells (Midant-Reynes 2000, 228). Midant-Reynes (2000, 230) considers that this provision of 'elaborate' grave goods and the evidence for external contacts suggests an increasingly complex arrangement of the society. By the close of the Khartoum Neolithic period (c. 2700 BC), state society had emerged in Egypt and a large number of subsidiary burials are in evidence, representing just one of the signs of a stratified society expressed through mortuary differentiation.

5.2.2 Summary

The Badarian culture, the earliest of the Nile Valley Predynastic cultures, is said to reflect 'an increasingly structured and complex society' (Midant-Reynes 2000, 152), but there remains divided opinion concerning whether or not the evidence suggests stratified or ranked society (Fattovich 1979, 216, 219; Castillos 1998a, 257). Trigger (Trigger 1983, 27) notes that although the Badarian period is indicative of differentiation through the burial record with distinctions in the sizes of graves, the lack of distinctions in terms of actual grave goods 'may, but does not necessarily, indicate a lack of social stratification at this time' (cf. Fattovich 1979, 215; Castillos 1998a, 256). Castillos (1998a, 257-258) considers that from Naqada I onwards, a 'higher level of social structure compatible with a community organised along class lines' is noticeable, and he supports this by pointing

to the increase in the production of stone vessels from Naqada I onwards and concentration on ornamental as opposed to utilitarian objects (cf. Köhler 1996, 217).

Differentiation in mortuary treatment increases throughout the Predynastic period, as we witness the contrast between smaller graves crowded into spatially restricted areas and larger graves being accorded more spatial distinction and freedom. Terminal Predynastic evidence from some of the major sites, such as Abydos Cemetery U, the Great Wadi cemetery, Hierakonpolis Locality 6, and Naqada, Cemetery T, suggests that these were elite areas reserved for the burial of high status individuals, which can be seen as representative of increasing social differentiation, and a development in mortuary practice from the preceding segregation of zones within a single burial area.

The evidence for spatially distinct cemeteries, and cemeteries that suggest social differentiation, first becomes apparent in both Upper Egypt and the Sudan at around 4400-4300 BC. When social differentiation makes an appearance in the burial record in Lower Egypt, in between 4000 and 3500 BC, it is not nearly so explicit in terms of quantity and variety of grave goods, grave size and construction, and spatial zoning of burials, as it is when it becomes manifest further to the south. Although there is a great deal of geographical variation in the expression of social differentiation through burial rites, and an earlier appearance of this differentiation in some areas than others, it can be maintained that once this phenomenon has started, there is a comparable rate of development between areas, if not a comparable input of resources.

5.3 Diversity of modes of inhumation

Midant-Reynes (2000, 169) notes: 'In one sense it is somewhat artificial to make a distinction between the Neolithic and the Predynastic, given that the Neolithic was *already* Predynastic, and the Predynastic was to some extent *still* Neolithic' (original emphasis). It is already evident from the discussion within Section 5.2.2 that there is a degree of overlap between the Neolithic and Predynastic. I will now try to clarify this position by: i) looking specifically at the extent of diversity/uniformity among modes of inhumation in the Neolithic and Predynastic in Lower Egypt and the Nile Valley, summarising the extent of disjunction in each region; and ii) comparing these situations

and discussing any apparent regional differences. In light of this information, temporal developments within this sphere and directionality of influence need to be defined in terms of how they might reflect wider changes in social organisation.

We might expect to see a degree of geographical regularity in the diversity of modes of inhumation, although it can reasonably be expected that differences based on kin and descent group ideology might be responsible for some peculiarities. It may also be reasonably expected that across time modes of inhumation will become increasingly homogeneous as the centralised state becomes increasingly influential. Finally, we might expect unique differences to be apparent in response to the landscape/environmental context of the burial.

Modes of inhumation comprise several different elements, which can be listed as:

- Orientation
- Burial Position
- Multiple or Secondary interments
- Disarticulation
- Protection of the body
- Spatial positioning of grave goods

5.3.1 Orientation

One of the earliest favoured orientations in Lower Egypt was for the dead to be laid on their right side with the head south and face to the east, one example being the Neolithic burials at Merimde Beni Salama where the most common orientations are head to the south, face to the east, and head to the east, face to the north (Castillos 1982, 171-172). In the south the most commonly recorded orientation for the deceased from the Early Predynastic is also with the head to the south, but the face to the west. Murray (1956, 89) comments that it is such a frequently recorded orientation that in Badarian burials, where this preference is not followed, it might suggest that the individuals belonged to a special cult, an example of which might be sun-worshippers. Hoffman (1980a, 110) suggests of Naqadian society that these variable orientations might reflect the presence of 'outsiders

or outcasts'. One striking example presents itself at the Lower Egyptian Neolithic site of el-Omari, where the orientation appears to follow with this Upper Egyptian trend, with the head to the south and face to the west. Hoffman (1980a, 196) suggests that this could either reflect the 'diffusion of ideas' from south to north, or alternatively be explained by the close proximity of el-Omari to the Nile Valley (see Section 6.2.3 and 7.1.3).

The burials in the Wadi Digla cemetery in Lower Egypt are commonly found to have the head pointed to the south, but in Digla II there becomes a fixed 'preference' for both head to the south and face to the east, which is also the trend apparent in the cemetery at Heliopolis (Debono and Mortenson 1988, 41; Midant-Reynes 2000, 216). From the Naqada II through III periods onwards, the most favoured orientation in Lower Egypt becomes, and remains, head to the north and face to the east (Debono and Mortenson 1988, 46). At Tura the Terminal Predynastic graves have a 52% preference for head north, over a 46% head south, and contemporary graves at Kafr Tarkhan have a 54% preference for head south and 32% for head north (Castillos 1982, 159, 165).

Castillos (1982, 43) notes that in the Predynastic cemeteries of the Upper Egyptian centre of Naqada, there is an 'unmatched orthodoxy ... regarding orientation, with practically all bodies head south, on the left side, facing west'. In Naqada cemetery T (the elite burial ground) there is 100% orthodoxy, and in cemetery B and the main cemetery, there is over 95% orthodoxy (Castillos 1982, 34-42). This orientation remains as a fairly constant preference in the south right up until Dynasty III when the northern tradition of head to the north and face to the east becomes more widely used throughout Egypt (Castillos 1982, 174; Debono and Mortenson 1988, 46).

To summarise, a definite north-south divide in preference of orientation is discernible throughout Egypt, but there appears to have been more scope for variation in Lower Egypt than in Upper Egypt (Debono and Mortenson 1988, 46). That greater variation occurred in Lower Egypt may be seen as reflecting less ideological cohesion, with less ideological dependence on contact between sites, whereas in the south, orientation reflects a more uniform regional approach to burial practice and ideology.

5.3.2 Burial position

Throughout the Neolithic, Predynastic and into the Early Dynastic period the deceased was invariably buried in a flexed state, although the observed degree of flexion is variable. From the Badarian period we know that the deceased was placed in a contracted position, a position which Midant-Reynes (2000, 122, 153, 166) comments may have been artificially achieved through tying the body up before rigor mortis occurred, and the dead at the sites of el-Omari and Merimde Beni Salama, of the Lower Egyptian Neolithic, were likewise placed in this contracted position and usually lain on the left and right sides respectively. This trend in burial position persisted in the Naqada I culture, where the bodies were usually placed in a contracted position, lying on one side, more usually the left side (Midant-Reynes 2000, 170). In the Early to Middle Predynastic cemetery at Heliopolis the majority of the burials are placed in a semi contracted position with the hands in front of the face, and in the contemporary Maadi South cemetery the bodies are described as being placed on their sides, with the legs doubled up and knees pulled up to the body, and the hands in front of either the face or chest, which is also the case in the Wadi Digla cemetery (Debono and Mortenson 1988, 38; Rizkana and Seeher 1990, 23, 73). In the Middle Predynastic bodies are still placed in this flexed position, which is also referred to as a foetal position or foetal crouch by some authors, and in addition the trend of burying children within large pottery vessels began (Hoffman 1980a, 110; Midant-Reynes 2000, 187).

There are cemeteries where different burial positions are more common, including the Naqada I and II burials at the cemetery of el-Ma'mariya, which is situated to the south of Hierakonpolis. Here there are two distinct types of burials found at el-Ma'mariya, one group of burials (Naqada I and II) placed in the traditional flexed position, but the other group of burials (Naqada III and Early Dynastic) appear to have been disarticulated by the time of interment (Needler 1984, 68). Another instance of burial where the limbs have apparently been artificially induced into a highly flexed state is noticed in the burial grounds of el-Kadada in the Sudan, which are partially contemporary to the Predynastic in Egypt, where Midant-Reynes (2000, 227, 230) points out that the 'distinct curvature of the cervical vertebrae suggests the use of ligatures or bags to fix the bodies into a contracted position'. It is interesting that a 'sacrificial' child inhumation in the southern

part of cemetery C at el-Kadada is placed in an outstretched position towards the edge of the burial pit, and not in the usual crouched position (Midant-Reynes 2000, 228). This may have relevance in terms of earlier comments regarding differential treatment depending on manner of death (Section 5.2.1).

The flexed burial position was invariably used throughout the Neolithic, Predynastic and Early Dynastic period, regardless of whether the cemetery was in Lower Egypt, Upper Egypt, or the Sudan. There are clearly some variations within this position, where we find some loosely flexed individuals and some flexed so tightly that they must have been forced and bound into the position. Apart from the occasional variation from this position within a single cemetery, the occurrences of a group of burials adhering to a variant position appear to be rare, one example being that given above of the cemetery at el-Ma'mariya (Needler 1984). The other main variant to the flexed burial position is the category of child burials within pottery vessels. The flexed position seems to have been maintained despite variation in terms of grave size and grave goods. It, therefore, appears that burial position is not reflective of social hierarchy, but is rather attached to generalised belief systems (cf. Carr 1995, 107, 177; Section 3.3).

5.3.3 Disarticulation

In the case of disarticulated burials, there are instances in the Predynastic to Early Dynastic where the grave has been disturbed or robbed and the bones of the deceased scattered or broken; there are also instances where the practice might have been deliberately carried out prior to burial (Adams 1988, 47). There is, however, a lack of evidence from the Lower Egyptian Neolithic. Petrie (Petrie and Quibell 1896, 24-28) recorded cases of dismemberment in the Naqada cemeteries; with several occurrences of the hands and wrists being removed, the forearms being detached, and the skull either being reversed, missing or upright. A further example where the dismemberment of the skeletal material suggests intent, is amongst the Naqada III – Early Dynastic burials at the site of el- Ma'mariya, and among the Class II burials in the Upper Egyptian cemetery at Abu Zaidan, where the limb bones are noted as often being piled in the centre of the grave (de Morgan 1912, 31; Needler 1984, 65, 68). At el-Adaïma in Upper Egypt, the skull has been separated from the body in a number of cases, and Midant-Reynes (1999, 115)

believes it possible that the separate burial of skulls was a part of the funerary ritual (cf. Crubezy 1998, 62-63).

The examples cited above might be interpreted as evidence for deliberate dismemberment, but any implications for social organisation remain speculative. The evidence for multiple burials discussed in Section 5.3.4, however, does suggest the movement of earlier burials to accommodate the recently deceased within family tombs.

5.3.4 Multiple/secondary interments

There is evidence for the practice of multiple interments in the Badarian culture, with the occasional occurrence of either two or three individuals within one grave, with one of the deceased often being a newborn child (Midant-Reynes 2000, 153). The Lower Egyptian Neolithic, however, does not offer much representation of multiple burials; the only example from el-Omari is that of a female buried with a foetus, and no multiple burials are apparent at Merimde Beni Salama (Midant-Reynes 2000, 122). Multiple burials do not occur at the site of el Ghaba, which is part of the Khartoum Neolithic tradition, but at Kadero there is one double interment of an adult female and a child of five to six years of age (Prominska 1984, 329; Midant-Reynes 2000, 134). The trend of multiple burials persists in the Nile Valley throughout the Predynastic period, but it is rare to find in excess of three individuals within a grave. An instance of five bodies being buried within a single grave at Adaïma, in Upper Egypt, is rare (Midant-Reynes 1999, 115), and at Hierakonpolis in the Locality 6 cemetery, Tomb 18 (Naqada IIAB) contains the bodies of four individuals who were laid 'relatively' in position, although they had been disturbed (Adams 2000, 4). Three of the bodies in Tomb 18 lay alongside each other in the usual facing west position, with a fourth, a female, having been interred in a corner (Adams 2000, 4). Petrie (Petrie and Quibell 1896, 16, 34) noted a number of multiple burials in the Naqada cemeteries and a notable Late Predynastic example is that of Tomb T5 in the elite cemetery at Naqada. Tomb T5 contained bones from an unspecified number of human skeletons, which were placed along the tomb walls, and five skulls placed in a separate group with the central skull on top of a brick (Hoffman 1980a, 114-116; Midant-Reynes 2000, 188). We find a very unusual occurrence at the cemetery of el-Mahasna in Upper Egypt, where one grave contains three child burials (Ayrton and Loat 1911, 4).

From Naqada III, multiple burials are considered a less common occurrence, although they do persist into the Late Predynastic and Early Dynastic period as attested by the evidence from Elkab and Helwan (Hoffman 1980a, 321; Hendrickx 1984, 227; 1994, 154; see Section 6.2.3 and 7.2).

While there is substantial evidence for multiple burials from the Predynastic record, this mode of inhumation is already less well attested by the Terminal Predynastic (see Section 7.2). There does not appear to be any real consistency in the occurrence of multiple burials, with some sites having evidence for various combinations of individuals, and others no evidence at all. Multiple burials in Egypt contain intact or disarticulated individuals, with a variable combination in terms of sex and age. This type of burial may help to provide an insight into the kinship groups and social structure on which the society was organised. Instances of adult female/child burial, for example, can reasonably be suggested as representing a maternal bond. However, the possibility of the female being a relation through affinal/consanguineal ties exists. Likewise, male/female burials may not represent a marital tie, but rather a brother-sister relationship. Some combinations of burial can prove to be enigmatic, for example the three children buried together at el-Mahasna, on whose relationship we can only speculate. One explanation is simultaneous death through some tragegy or the outbreak of disease, but these children may or may not be related, as children are frequently grouped in spatially distinct burial zones.

Burials where excavation suggests a lapse of time between interments may either suggest a family group occupying a single tomb or, where the distribution of age/sex is limited, we may be witnessing some other phenomenon connected with matrilineal or patrilineal society. David (1992, 185, 196) notes this practice by the Mafa of Cameroon, as a means of continuity and 'structural assimilation', with a line of senior men making a link with their founder. In contrast, an example cited by Ucko (1969, 269) provides an insight into multiple burial that can represent a 'cross section of a local population' as opposed to one lineage group, in that the Merina of Madagascar bury together males, females and children of affinal and consanguineal ties. This ethnographic example also illustrates

both how inhumations are shifted post-interment, with the most recently deceased occupying a specific and 'honoured' position, and how temporary burial may be practised around a mass tomb, with re-burial of the bones possibly after several years (Ucko 1969, 269). Hoffman (1980a, 116) also raises the possibility of mass re-burial as an explanation for the multiple burial in tomb T5 at Naqada, and this would provide a viable explanation for occurrences of multiple burials where disarticulation is observed. Mass burials occurring simultaneously, however, may be indicative of warfare, natural disaster or infectious disease within the community.

5.3.5 Protection of the body

Modes of protection for the interred develop considerably during the course of the Neolithic, Predynastic and Early Dynastic. There is a substantial development in terms of the method of creating a barrier between the body of the deceased and the earth. Evidence dates back to the Badarian period in the Nile Valley and at the site of Matmar the majority of graves contained matting and, more infrequently, animal skins (Brunton 1948, 10). At Mostagedda, Brunton (1937, 46-47) notes that matting was found in the majority of the graves, and that animal skins were often used to wrap the body. The Lower Egyptian Neolithic sites show consistency in the trend of protection throughout the country with the deceased wrapped in either matting or animal skins, for example at the site of Merimde Beni Salama (Midant-Reynes 2000, 116). In addition to the body being covered by matting, there is evidence from the Badarian sites of Matmar and Mostagedda, and the Lower Egyptian Neolithic site of el-Omari, for some of the deceased being provided with a pillow of straw or rolled up animal skin (Matmar/Mostagedda) or plant material/stones (el-Omari) for their head to rest upon (Brunton 1937, 46; 1948, 9-10; Midant-Reynes 2000, 122). This practice is also noted in the Wadi Digla cemetery where on a few occasions a stone has been placed under the head of the deceased. Hendrickx (1994, 176-177) observed an area of staining beneath and behind the skull in Grave 48 at Elkab (Naqada III) and suggested that this was 'probably' the remains of wood. The practice of wrapping the bodies of the deceased continues into the Predynastic, and at Heliopolis, as in the Maadi South and Wadi Digla cemeteries, we find the deceased also being wrapped in reed mats or animal skins (and sometimes both), and a few graves at Heliopolis show evidence of reed mat or wood lining, or wood roofing (Mortenson

1999c, 366; Seeher 1999a, 456). It is also interesting to note that in the Heliopolis cemetery, one dog and one goat were also wrapped in matting (Mortenson 1999c, 366).

The site of el-Ma'mariya in Upper Egypt provides evidence for different categories of burial treatment (de Morgan 1984, 56-57). Type 3 tombs (Naqada I-II) show that the deceased were being buried in direct contact with the ground, and the later Type 1 tomb category (Naqada III to Early Dynastic) saw the deceased being placed in small cists of mudbrick covered with a slab (Needler 1984, 57, 124). Similarly, at Abu Zaidan in Upper Egypt, the Naqada I-II Class I contracted inhumations were made directly into the ground (de Morgan 1984, 57). The cemetery at el-Mahasna is a good example for a variety of protective measures being utilised throughout the Predynastic period (Ayrton and Loat 1911). The wrapping of the body within a mat occurred both in shallow round graves and in oblong/oval graves, and in the Late Predynastic, some of these oblong/oval graves also had twig or reed roofing, and some burials have evidence for wooden plank lining, expressing similarity in development to the wood roofing and lining seen in the cemetery at Heliopolis (Ayrton and Loat 1911, 4-5). What may be described as prototype coffins are found in association with two burials at el-Mahasna, where the deceased were placed within part-baked ceramic walled coffins, in which the top and bottom comprised mud and matting, and in the Late Predynastic burials at Kafr Tarkhan the body is invariably covered with a shroud or mat, and then sometimes placed within a reed or basketry coffin and, rarely, in large ceramic vessels (Ayrton and Loat 1911, 5-6; Ellis 1999, 389). Developmental stages are also detectable at the site of Armant, cemetery 1400-1500, and here the practice of placing matting underneath and/or over the deceased is still apparent, but by the Terminal Predynastic period appears to be declining in popularity (Bard 1999, 143). This decline in popularity may be linked to the introduction of ceramic coffins and also to the depletion of resources for matting, due to both desiccation and overuse (Barbara Adams, *pers comm.*).

We can trace the development right through to the Early Dynastic period with examples from the site of Abydos, which was a Predynastic burial ground for the early chieftains and developing elite of Egypt, and became the burial ground for the Dynasty I-II kings. The tomb of King Den was originally paved with granite slabs, which illustrates a long

developmental process from the mudbrick lined pits at el-Ma'mariya and the wood plank lined burials of el-Mahasna (Ayrton and Loat 1911, 8; Wilkinson 1999, 237). The development in methods for protection of the body of the deceased appears to follow temporal rather than geographical trends. The temporal trend develops from protection of the body with matting and animal skins, with some evidence for lining/roofing of the grave, to prototype coffins and, subsequently, coffins of reed, basketry, or clay appearing throughout Egypt. These trends suggest that modes of bodily protection are not, in themselves, direct evidence for social differentiation, but rather their increasing elaboration or variety within a cemetery can be indicative of increasingly hierarchical societies.

5.3.6 Spatial positioning of grave goods

It is possible to create several stages of development with respect to the positioning of artefacts within graves through the Neolithic and Predynastic and into the Early Dynastic period. Petrie (1920, 48) had been aware of the phenomenon of artefact positioning and he described how the 'funereal system was developed as a formal ritual, as indicated by the positions of the offerings in the graves being usually in the same order'. He described the positions of the usual objects in the cemeteries of Naqada, which included coarse jars being placed in the north of the grave (i.e. by the feet), wavy-handled vessels in the south, daggers by the hips, and knives and lances behind the body (Petrie and Quibell 1896, 29-30). Adams (1988, 16) outlines temporal development in the spatial positioning and type of grave goods and the development in the shape and the size of graves, from small oval/circular graves to larger rectangular tombs (see Figure 5.3). Even before the Predynastic, the graves of the Badarian culture witness one or more pottery vessels included within the animal skin that wrapped the deceased (Midant-Reynes 2000, 153). The principle of relationship between the body and the funerary objects can also be applied to the use of coffins, where some objects would accompany the deceased within the coffin, and some (often larger) objects would be placed within the grave, but outside of the coffin. The feature of the niche, or additional chamber for the provision of grave goods, evolves into tombs with a greater and greater number of chambers to accommodate the accumulation or acquisition of wealth, paralleling the increase of stratification. An example of two of the stages in this development are present at Armant,

firstly from five graves in cemeteries 1400-1500, where extra recesses have been provided next to the burial pit, and secondly in the large tombs 1207 and 1208 (Bard 1999, 143). At Abydos, in cemetery U, tomb U-j has 12 chambers (Dreyer 1999, 110), and at Tura in Lower Egypt, there were a few graves with more than one chamber for the placement of grave goods (Mortenson 1999b, 851).

The evidence appears to show a correspondence between grave goods inside burial wrappings, inside coffins and objects placed close by the face or directly above the head, and also a correspondence between those objects remaining outside wrappings, outside coffins, and beyond the feet in the main burial chamber, or the single chamber, and in a second chamber, or niche. Midant-Reynes (2000, 187) notes that with the introduction of compartments into tomb architecture, we find items such as weapons, palettes, and jewellery placed close to the body. She suggests that these are placed like this so that they are 'at the immediate disposal of the deceased in the hereafter' (Midant-Reynes 2000, 187). In the cemeteries of Abu Zaidan and Abusir el-Meleq (by the Fayum entrance, and in Upper Egypt respectively) the finest objects are recorded as having been placed by the head, with and by the hands or on the body, in contrast to larger, ceramic vessels that would have a degree of spatial separation from the body (de Morgan 1984, 56; Seeher 1999b, 92). At both el-Omari and Heliopolis the occurrence of grave goods is rare. However, at both we find the positioning of a small pot, by the face, arms or legs (Mortenson 1999a 593; 1999c, 366). This in turn may be seen as correlating with the later Egyptian practice of placing the most valued objects on the body (Spencer 1993, 47). It is the increasing provision for grave goods, rather than their placement in relation to the body, that is indicative of increasing hierarchy within society. The development in tomb construction to include additional storage areas shows a continuation of pre-existing mortuary elements, but does indicate the increasing need to distinguish social position through economic means.

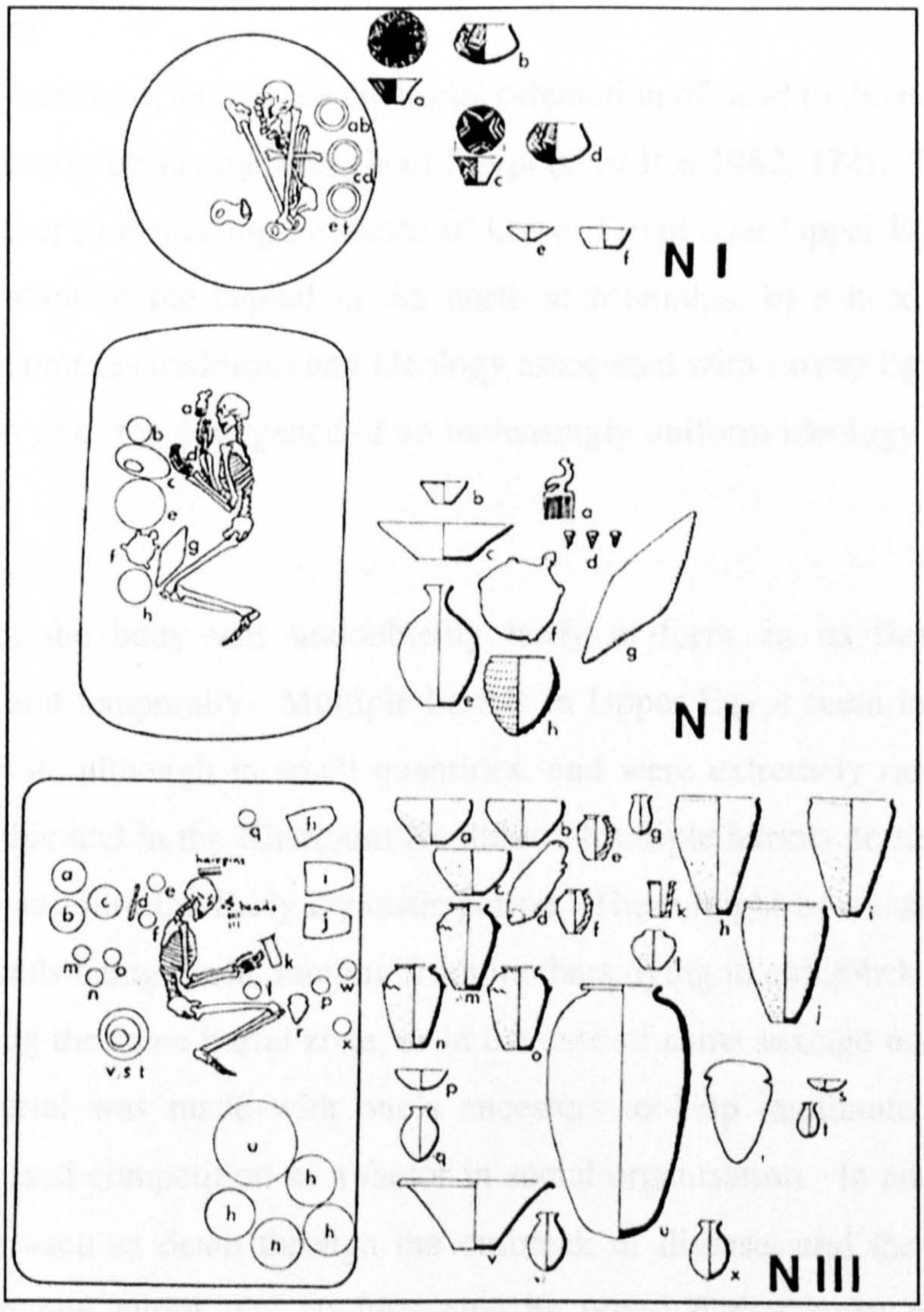


Figure 5.3: Typical spatial positioning of grave goods, Naqada I-III (after Adams 1988, 16, fig. 4)

5.3.7 Summary

By the Early Dynastic period we see the burial orientation of head to the north, face to the east, more frequently occurring throughout Egypt (Castillos 1982, 174). This conformity may indicate either a) increasing influence of Lower Egypt over Upper Egypt, in relation to the new location of the capital in the north at Memphis, b) a need for the Upper Egyptians to encompass traditions and ideology associated with Lower Egypt, for reasons of legitimisation or c) the emergence of an increasingly uniform ideology with the newly unified state.

The position of the body was undoubtedly fairly uniform, in its flexed state, both geographically and temporally. Multiple burials in Upper Egypt seem to have occurred from the Badarian, although in small quantities, and were extremely rare in the Lower Egyptian Neolithic and in the Khartoum Neolithic. Multiple burials persisted throughout the Predynastic and into the Early Dynastic period. There might be a number of reasons for multiple burials being made, ranging from mothers dying in childbirth to small family groups occupying the same burial zone, or in the case of same sex/age multiple burials it may be that burial was made with one's ancestors to help legitimate lineal descent, indicating increased competition as a factor in social organisation. In addition, we must look to reasons such as death through the outbreak of disease, and the affected group being placed in one burial pit. It may also be possible that some multiple burials represent individuals who have died during conflict and, similarly to those afflicted with a terminal disease, have been buried in a mass grave. A further interpretation for mass burial may be re-burial within a multiple grave, bringing together individuals belonging to a certain kin group.

The evidence implies that the mode of bodily protection developed from earliest times, in both the north and south, when the body was wrapped in matting and/or animal skins, then ceramic and basketry coffins were introduced, followed at a later date by ceramic and wood coffins. The grave was also lined and/or roofed with mudbrick, mudplaster, or wood. The evidence also suggests a common, although not universal, desire for the living to provide the dead with some form of protection from the earth. The spatial positioning of grave goods has relative similarities throughout Egypt during the Predynastic and into

the Early Dynastic. The placement of the grave goods follows the trend of smaller and personal objects being placed by the head or upper body, including smaller vessels, amulets, cosmetic palettes and tools, and larger objects, such as large storage vessels, with provisions by the feet. What does differ is the scale in the provision of grave goods and hence the architectural provision within the grave design. Where there is less emphasis on putting resources into grave furnishings, in Lower Egypt, there are cemeteries where graves may have still have one small pottery vessel, invariably located by the head. The provision of extra storage space within the tombs accordingly seems to develop at a faster rate in the south, in line with a larger input of resources into grave goods and prestige goods, at an earlier date, which may be associated with increased competition for power.

5.4 Concluding remarks on the regional variation in mortuary behaviour

The above synthesis would suggest greater variation in mortuary behaviour in Lower Egypt than in the Nile Valley between the Neolithic and Predynastic periods. The latter shows more of a developmental disjunction in the mortuary remains, whereas the former displays much clearer signs of a disjunction in the approach to the burial of the deceased. The Lower Egyptian sites reflect a change in the ideology connected with funerary ritual, which may be driven by changes within the structure of society (cf. Carr 1995, 107, 177). It will now be interesting to observe the extent to which this is reflected in the data analysis for my key sites in the Delta (Chapter 6).

Such changes might incorporate a greater degree of contact between sites, with a number of sites identifiable as belonging to the Maadi culture, and an increased degree of social differentiation being shown through the medium of burial practice. The greater degree of cultural similarity must suggest more interaction between the activities of sites and potential for the increase in differentiation between members of society. An increase in the number of individuals acquiring some form of raised individual/familial importance within a community, or between communities, does not necessarily imply that a corresponding change will be evident in the mortuary remains. However, where there is clear evidence for increasing differentiation in the mortuary record, it is not unreasonable to infer a society that a) is no longer totally egalitarian, b) is at a level of social

organisation where it is necessary/desirable to legitimise status through funerary provisions, and/or c) is stressing its uniformity through the ideology of funerary ritual and burial practice.

It is clear that different types of social organisation are present throughout Egypt during different chronological periods. Egalitarian society appears to persist for longest in Lower Egypt, where we witness only minimal differentiation in terms of grave provisions (if any), until c. 4000 cal BC. Only by the stage of Heliopolis and the Maadi cemeteries might we start to detect signs of a slight transition to ranked society, with some evidence for spatially discrete burial areas, and some variability in protection of the body and number of grave goods. Ranked society in the Nile Valley, however, is visible from the Badarian period onwards, by which point there is even some possibility of emergent stratification and a transition to patrilocal society. It is possible that Kadero, in the Sudan, is similarly poised on the border of ranked and stratified society. Sites within the Nile Valley display increasing stratification from c. 3900 BC onwards, with spatially distinct burial areas for the elite gradually emerging, and greater variation observable in grave size and construction. It appears, increasingly, that a combination of such elements of burial might be seen to reflect transition to additional tiers within existent hierarchy, and ultimately the close association between economic status and social position. Increasing uniformity in such aspects as burial orientation might also suggest increasing inter-societal contact and/or a lessening dependence on the importance of kin groups. Variation in orientation, with graves notionally aligned upon those of important ancestral figures, or kin group heads, does seem to persist for longer in Lower Egypt. This suggests a longer association with the importance of kin groups than in the Nile Valley. It will be further interesting to see what evidence is forthcoming from the sites in the northeast Delta as to the presence of multiple burials, since these may also be evidence of the preservation of kin group importance. It remains to be seen, therefore, in the following two chapters (on statistical and spatial analysis, 6 and 7), whether such differentiation is detectable, and if so, what insights this may provide as to the nature of social organisation and ideology/ideological change in the northeast Delta between the Terminal Predynastic and Early Dynastic periods.

6 Results and Discussion of the Data Analysis

6.1 The data

This chapter is concerned with presenting the results of the data analysis, and considering these results on both an intra- and inter-site level. Additional comments regarding the nature of the data, or more specifically the differences in data quality between the sites, are also included here and problems that have arisen due to the differential recording of the archaeological material are addressed.

The data for Minshat Abu Omar (MAO) hold the greatest scope for analysis. Human skeletal remains data are excellent (sex, ageing, the positioning and orientation of the body, etc), the temporal division of the site is clear, and the publication of the graves is of excellent quality (Kroeper and Wildung 1985, 1994, 2000; Kroeper 1992; 1999). The major problem lies in the fact that only the first two volumes of graves have been published in monographic form to date, so for the majority of the MAO III and IV phases it is only possible to access the data from preliminary articles in journals and edited volumes.

The dataset for Kafr Hassan Dawood (KHD) is the largest dataset being considered by this study, and together with MAO it is one of the most completely excavated cemetery sites in the Delta (Hassan 2000a; Hassan *et al* in press; Rowland in press a & b; Rowland and Hassan 2003). In terms of this analysis, the material excavated post-1995 has very good data pertaining to the age and sex of human skeletal remains. In addition, skeletal remains from the 1994 season were re-examined. However, due to unfortunate consequences regarding conservation methodology, it was only possible for the bioanthropologists to recover information pertaining to the age and/or sex of 33 individuals (Tucker 1997, 5). Other than this, prior to 1995 the records only provide details as to the orientation of the interred.

The data for Kufur Nigm (KN) are perhaps the most restrictive out of these three main sites. It has the smallest population, the least information on skeletal material, and also limited information on grave goods, with exact raw materials not always confirmed, and

occasionally only estimations of total goods are provided (Troy 1995). Troy (1995, 1) highlights the fact that care must be taken in some areas of comparative analysis, for example the grave sizes are split into groups of coffins, pit burials, and jar burials, and she only considers it appropriate for comparisons on a size basis to be made within each of these three groups separately. For KN Troy (1995, 1) notes that in the case of jar burials, for example, the length of the jar is given as overall burial length, but in the case of a pit lined with mud-bricks, the length of the actual pit is recorded.

Tell Ibrahim Awad (TIA) will also be considered in terms of the results from the analysis of the main three sites, as detailed above. There are to date a very limited amount of data for burials at TIA during this early period. As such, it has not been necessary or desirable to conduct the same analyses for TIA as for the other three sites. Even so I will highlight the results for TIA where possible and include this within the analytical discussion as and when appropriate.

At KHD there are a number of multiple burials. These range from double interments to burials containing up to nine individuals. It has been decided not to include these within the main analysis since factors including the grave pit size and total goods will create distortions during certain sections of analysis (see Section 4.2). These graves are drawn into the discussion as and when appropriate. At MAO there are a few burials which are noted as *possibly* being in the same pit. However, due to this and the low numbers concerned, together with the fact that the burials have been published individually in the site reports, these have been left within the main dataset (Kroeper and Wildung 1994, 111-112, 123-125; 2000, 120-121, 123). The records for KN only indicate one instance of a possible contemporary double burial, with two burial jars found within one pit (grave 29 A and B), and this is included within the analysis. In addition, in Section 7.2, the results of spatial distribution of multiple burials at KHD are provided, together with a discussion on possible inferences pertaining to kinship groupings and developments at the site.

It should be stressed that whereas the MAO data have been analysed according to temporal divisions (MAO I-II, MAO III and MAO IV), the data from KHD and TIA are

chronologically comparable only to MAO III and IV, and that from KN to MAO IV. The MAO I and II data are considered together due to a number of graves being classified as MAO I-II (Kroeper and Wildung 1994; 2000). In addition, the MAO graves have internal subdivisions within these four main groups, mainly based on the presence of certain ceramic types: Groups 1a and 1b, Group 2, Group 3a, 3b and 3c and Group 4 (Kroeper 1988). MAO is thus the most useful sequence available. Its dating is as follows: MAO I and MAO II (c. 3300-3200 BC and 3200-3100 BC, Late Predynastic and roughly comparable to Kaiser's Naqada sequence IIc-d, Hendrickx's NIIC-IID2, and to Petrie's Sequence Dating 33-78); MAO III (c. 3100-3000 BC, Terminal Predynastic in date and roughly comparable to Naqada IIIa-c1, NIID2-NIIIC1 and SD 78-80); and finally MAO IV (c. 3000-2850 BC, dating to the Early Dynastic, Dynasty I and Early Dynasty II, and roughly comparable to Naqada IIIc2-c3, NIIIC1-C2, and SD 80-82) (Petrie 1921; Kaiser 1957; Kroeper 1987, 81; 1996, 79-81; Kroeper and Wildung 1994, xiv; Hendrickx 1996; see also Wilkinson 1999, 27; Section 2.2 for note on chronology). The absolute chronology provided in Section 2.2 is predominantly based on radiocarbon dates collected from Upper Egypt and Hendrickx (1996; 1999a, 81) lists only two radiocarbon dates for MAO, both for phase IV, graves 1930 and 1590. Kroeper (1987, 81) notes that C14 analysis for MAO I and II, gave dates of around 3200 BC, but that the MAO IV samples only confirm that they are 'definitely later than samples from other groups'.

Period (Kaiser)	*Period (Hendrickx)*	*Delta Sites*
-	NIIID	TF, MAO IV, TIA
NIIIc3	NIIIC2	TF, MAO IV, KHD TIA, KN
NIIIc1-2	NIIIC1	TF, MAO III, IV, KHD,TIA, KN
NIIIa2-IIIb2	NIIIA1-IIIB	TF, MAO III, KHD, TIA(s)
NIIc-IIIa1	NIIC-IID2	TF, MAO I, II, TIA(s)
NIa-IIb	NIA-IIB	TF

Table 6.1: Relationship between relative chronologies and sites [TF: Buto/Tell Fara'in; TIA(s): shrine, not cemetery] (after Hendrickx 1996; 1999a; Wilkinson 2000)

6.2 The data analysis: statistical

This chapter presents the results and interpretation of the four stages of statistical analysis that I applied to the mortuary evidence from the Delta sites. These are detailed briefly below in terms of the aims of each type of analysis, its implementation, and brief details concerning the methodology employed to carry this out (see Chapter 4 for further details). At the beginning of each stage of analysis, the reasons for carrying out the analysis, together with a more detailed description of how the data and methodology are combined, are given.

- The first stage of data analysis is carried out in order to examine variation in the distributions and specifically the relationships between artefact types. This is examined between sites, between time phases, and it instigates a discussion on the consistence of associations between artefact types and individuals for whom the sex has been confirmed. The relationship between sex and artefact types is primarily dealt with in stage three.
- The second stage of analysis explores variation in terms of artefact type distribution and hierarchy of these types, again on an inter- and intra-site basis. The analysis specifically orders the graves by the occurrence of artefact types to which a certain weighting has been given. This allows me to observe similarities and differences in the spread of wealth and make inferences concerning how this might reflect the social organisation, and development thereof, throughout the use of the cemetery.
- The third stage of analysis looks at the individual variables and their distribution throughout the cemetery; introducing the distribution of grave types, potmarks, and burial orientation. More detail is now paid to the individual types of artefact, their relationships in terms of biological sex, and differences of distribution between the sites. The section also starts to investigate the symbolism attached to certain types of artefact, and how and why these might be changing on an inter- and intra-site basis. In addition, changes in the ideology of belief systems and thoughts concerning the afterlife are discussed through the results of the analysis of orientation. The distribution of potmarks is encompassed within the broader discussion of increasing centralised organisation in Egypt during this period.

- The fourth stage of analysis looks for associations between the categories of wealth (total goods and number of types), effort (distance of raw materials and grave size), and acquired/inherited status (age and sex). The intention is to explore changes in these relationships and the implications that these bring for social differentiation. Following the analysis, it will be possible to look at the sites, side by side, to assess whether they express the same of different types of social organisation by the time the cemetery goes out of usage.

Within each stage there is an interpretative discussion concerning the results of the analysis and their implications for social development and varying degrees of social differentiation displayed between the cemeteries. Following the presentation of all of the sections of statistical analysis, an overall discussion of the results ensues to lay out the key points that can reliably be inferred from the analysis; this together with a summing up of the results ahead of the conclusions to be presented in Chapter 8, following a discussion of the spatial analysis carried out for KHD in Chapter 7. Chapter 8 will examine how the results relate in terms of previous hypotheses on the developments surrounding the formation of the Egyptian state (Chapter 2), in terms of the mortuary evidence reviewed throughout Egypt and into the Sudan (Chapter 5), and how they contribute towards our expanding knowledge of the internal interplay between sites in the Delta, and their interaction with sites in the Nile Valley during this crucial formative period.

It is important, as the analysis is discussed, to remember various issues that have been raised (particularly in Chapter 3) in regard to our conceptions when looking purely at the archaeological material that has been left behind. Midant-Reynes (2000, 175) succinctly notes in a discussion on the representation of individuals through the medium of figurines, that we really have to consider a number of key issues when looking at funerary offerings. These are summarised as follows: who were the objects intended for, what were the criteria by which these specific objects were included within the assemblage, and what was their function (Midant-Reynes 2000, 175). She also warns of the dangers of trying to 'extrapolate back from the Dynastic period into prehistory', particularly with

regard cognitive schema, however, in some instances below, when I have considered it relevant, examples from the Dynastic period have been cited, albeit with due caution.

6.2.1 Data analysis stage one, part one (*iastats: jaccard*)

This analysis proceeded through use of the *jaccard* function in the *iastats* suite of programs (Section 4.2.1 for methodology). The results are being illustrated by Single Linkage Dendrograms, although the analysis outputs the same results into a number of different chart forms, details of which are provided in Section 4.2.1 (all charts included within Appendix 2). The analysis investigates the co-occurrence of artefact types in order to establish whether potential relationships between types are present within the data.

For the analysis detailed below, I have taken the figure of 0.50 and above as representing a strong association, whereas a figure of 0.25 is taken to represent a weak association, and 0.75 a particularly strong association. There are no set rules within the statistical literature regarding what constitutes strong and weak associations, so these figures are arbitrary and, as will be seen, do not represent the sole method by which I am interpreting the dendrograms. It is also vital to consider the distance between the 'branches' of the dendrogram in order to determine how significant they may, or may not, be.

KHD

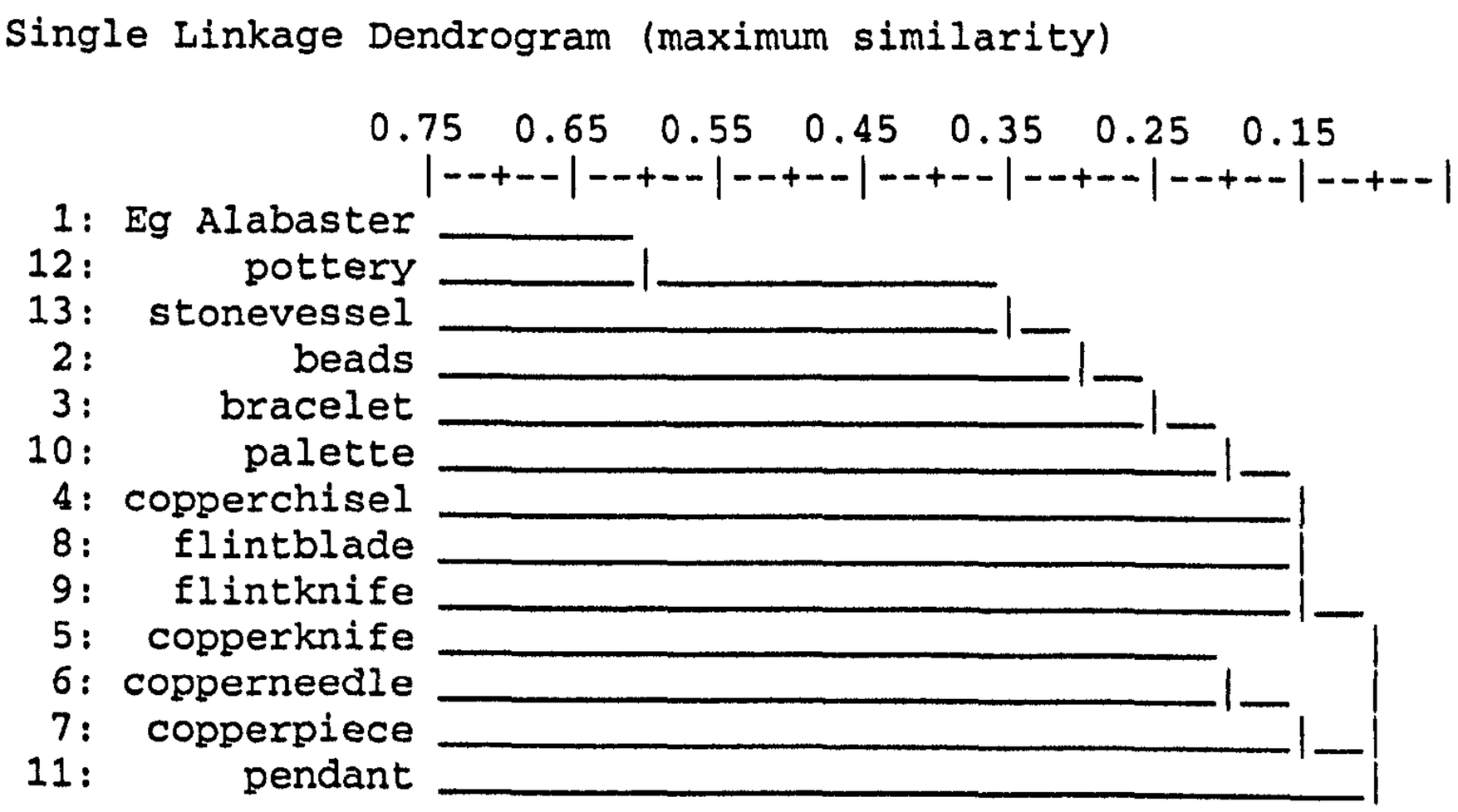


Figure 6.1: KIID Single Linkage Dendrogram showing the relationships between groups of different artefact types

In this dataset there is only one particularly high association, between pottery and Egyptian alabaster (0.65), with the next highest being between stone vessels and pottery (0.37). This analysis has produced two groupings. Within the lower group of Figure 6.1 there are three varieties of copper artefact and pendant, but the association is weak at less than 0.25. In addition, there is little horizontal distance between the points where the two groupings join, suggesting that these groupings are not particularly significant. The upper group shown in Figure 6.1 includes the remaining types of grave goods, less cones, copper wire and gold, which have been omitted from the analysis as their occurrence is too low to be statistically viable. The majority of items of 'adornment' (see Section 6.2.3 for further discussions) are found clustered in the upper group. While we see a split in copper objects between the branches, this would not appear to be significant, and *jaccard's* matrix confirms that associations are low between all copper objects, with no greater disparity between than within branches.

KN

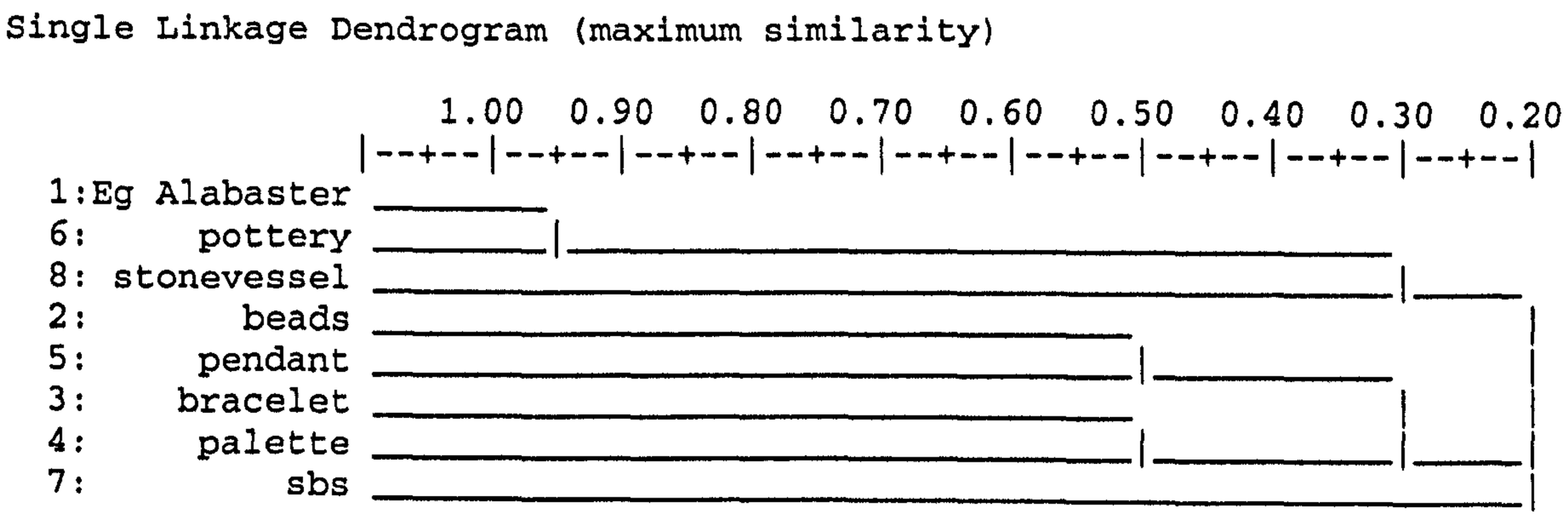


Figure 6.2: KN Single Linkage Dendrogram showing the relationships between groups of different artefact types

The dataset from KN (Figure 6.2) shows a very high association between pottery and Egyptian alabaster (0.97), with the next highest in the upper group being between stone vessels and Egyptian alabaster (0.30). There are a number of other high associations, items associated with adornment, shown within the lower two groups of the dendrogram show a high association between beads and pendant, at 0.50, also bracelet and palette, with pendant and bracelet having a somewhat weaker association at 0.33. This

dendrogram shows similar clustering to the KHD material in terms of items of adornment. The long horizontal 'stalk' between the upper and lower groups suggests that the clustering of objects together within this top group is significant, whereas the lower two groups appear more closely related due to the short horizontal separation. This, however, would suggest that the separation of the two clusters of items of adornment is not highly significant. Copper pieces have been omitted from this analysis due to low representation.

MAO

In the MAO I-II dendrogram (Figure 6.3) the highest association appears between beads and pottery (0.63) and pottery and SBS (0.57), SBS being objects of shell/bone/stone as defined in Section 4.1.2. There are also high associations between palette and Egyptian alabaster (0.40) and pendant and palette (0.33). There are no copper pieces or chisels within the MAO I-II assemblage, and copper knives are omitted from this analysis due to low quantities.

The MAO III dendrogram shows a number of high associations: pottery and Egyptian alabaster (0.72), palette and Egyptian alabaster (0.71), beads and pottery (0.70), in addition to a couple of slightly weaker ones, SBS and Egyptian alabaster (0.48), and copper piece and Egyptian alabaster (0.38). There are no copper needles amongst the MAO III assemblage, and copper chisels and knives, and flint knives and pendants are omitted due to low numbers.

The MAO IV dendrogram also displays a number of high associations: SBS and beads (0.70), palette and beads (0.60), stone vessel and pottery (0.59) pottery and Egyptian alabaster (0.57), beads and pottery (0.50) and a weaker link between copper piece and stone vessel (0.38). The clustering shows more similarity to that for MAO I-II, than in the closer chronological phase MAO III. However, the lack of a wide horizontal 'stalk' between the groups suggests that their separation is not highly significant in terms of clustering of artefact types. There are no copper needles within the MAO IV assemblage and copper knives, flint knives, pendants and bracelets are omitted due to low occurrence.

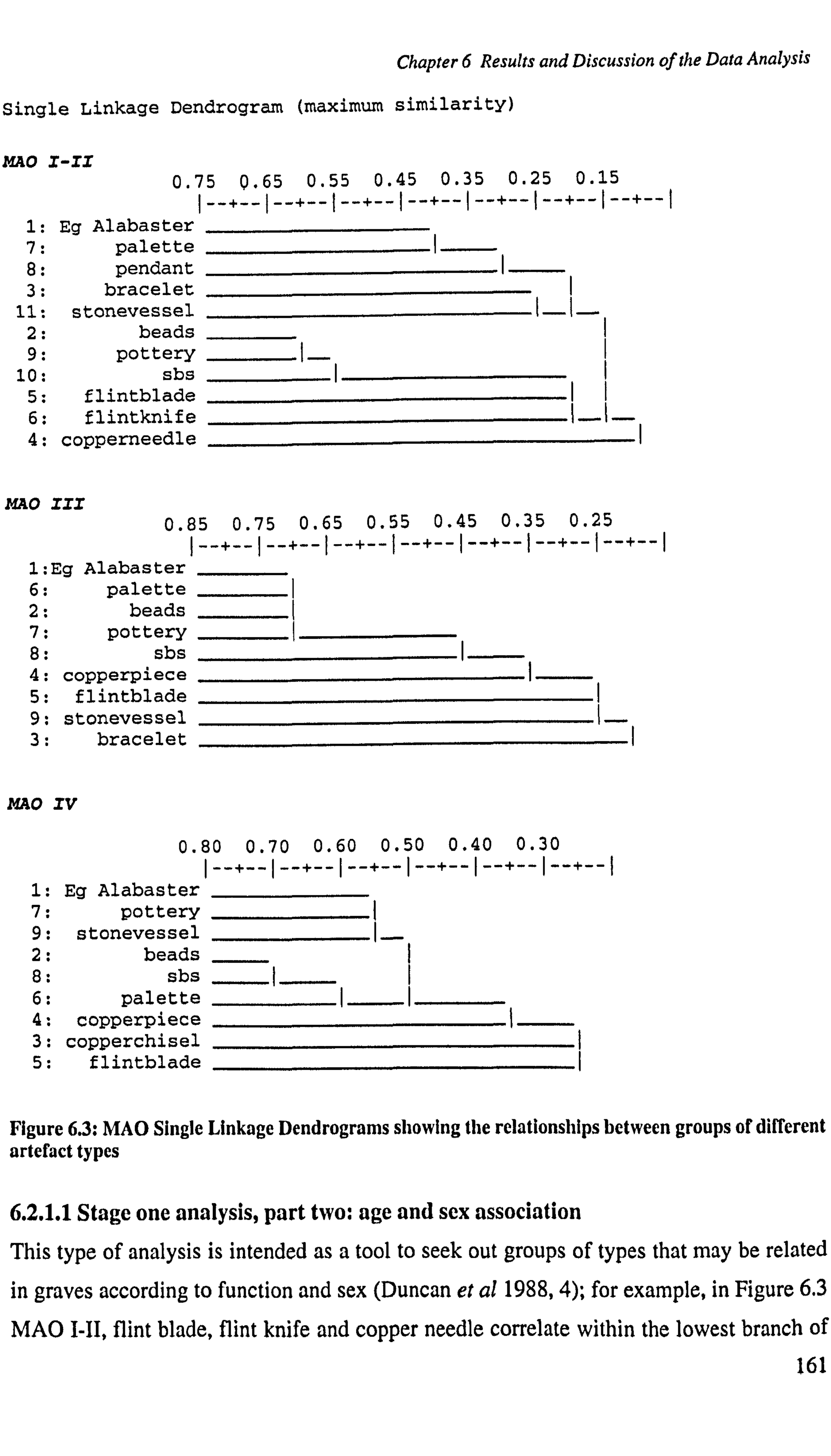


Figure 6.3: MAO Single Linkage Dendrograms showing the relationships between groups of different artefact types

6.2.1.1 Stage one analysis, part two: age and sex association

This type of analysis is intended as a tool to seek out groups of types that may be related in graves according to function and sex (Duncan *et al* 1988, 4); for example, in Figure 6.3 MAO I-II, flint blade, flint knife and copper needle correlate within the lowest branch of

the dendrogram. Where such associations between types occur it is possible next to examine the group of artefact types in terms of possible functional relations and furthermore to look at whether the types show any consistent associations with burials of males, females, or children. The results are shown in Figures 6.4 –6.6.

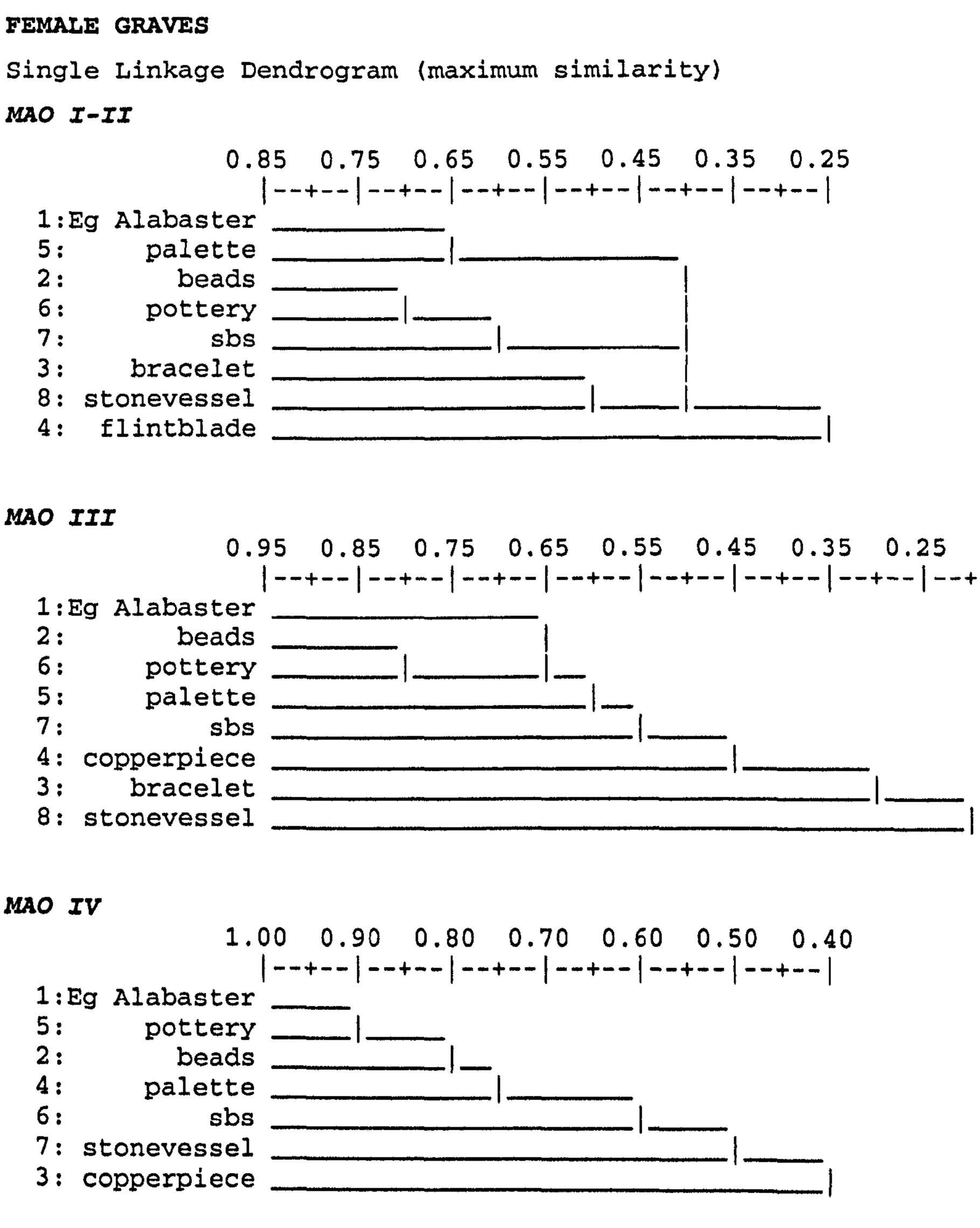
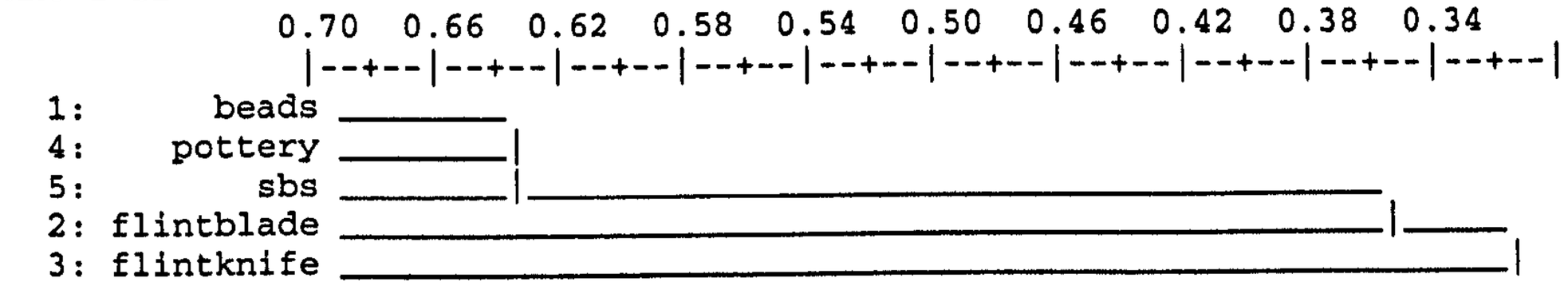


Figure 6.4: MAO Female population Single Linkage Dendrograms showing the relationship between groups of female associated artefact types

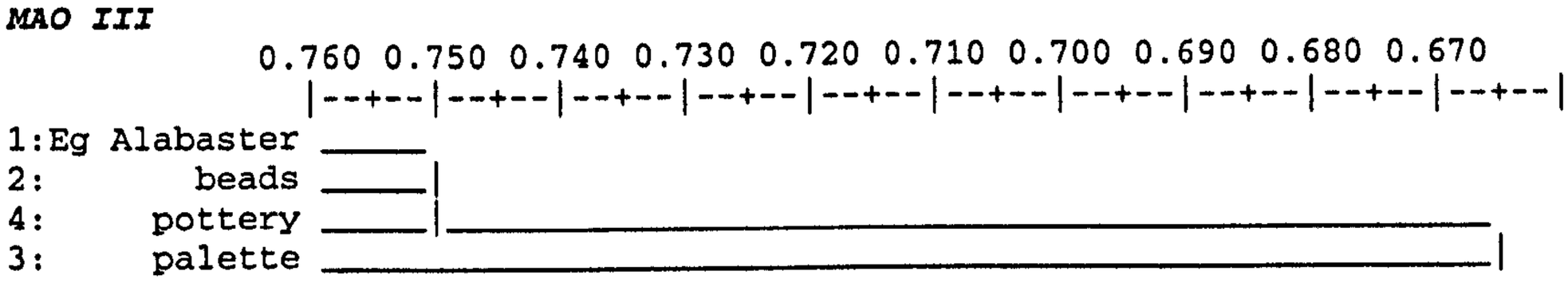
MALE GRAVES

Single Linkage Dendrogram (maximum similarity)

MAO I-II



MAO III



MAO IV

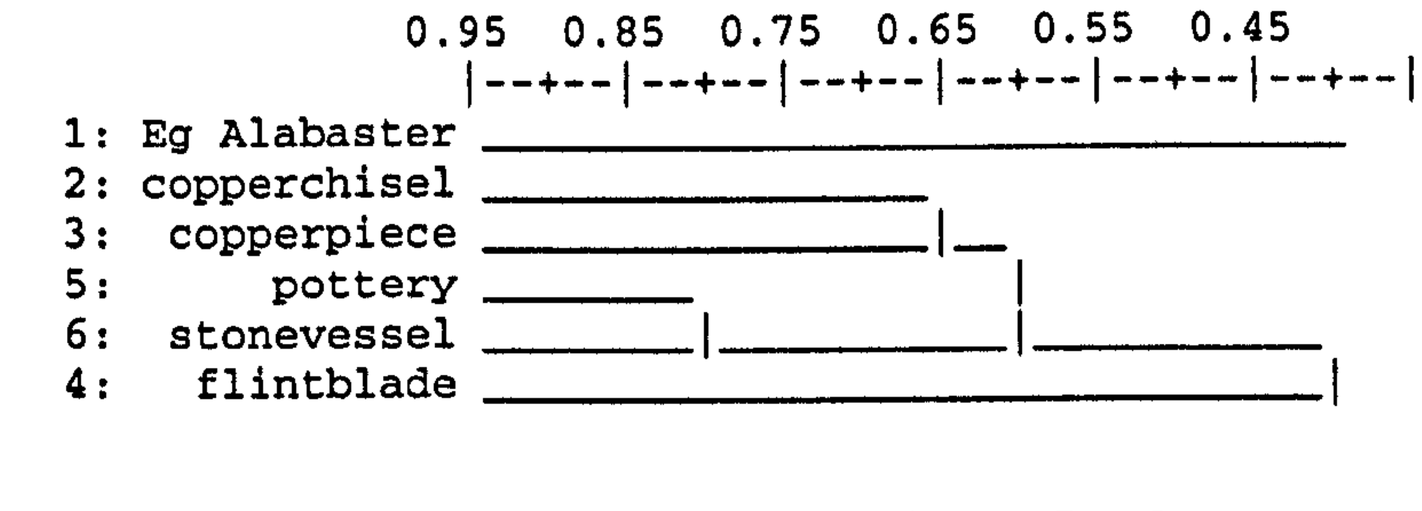
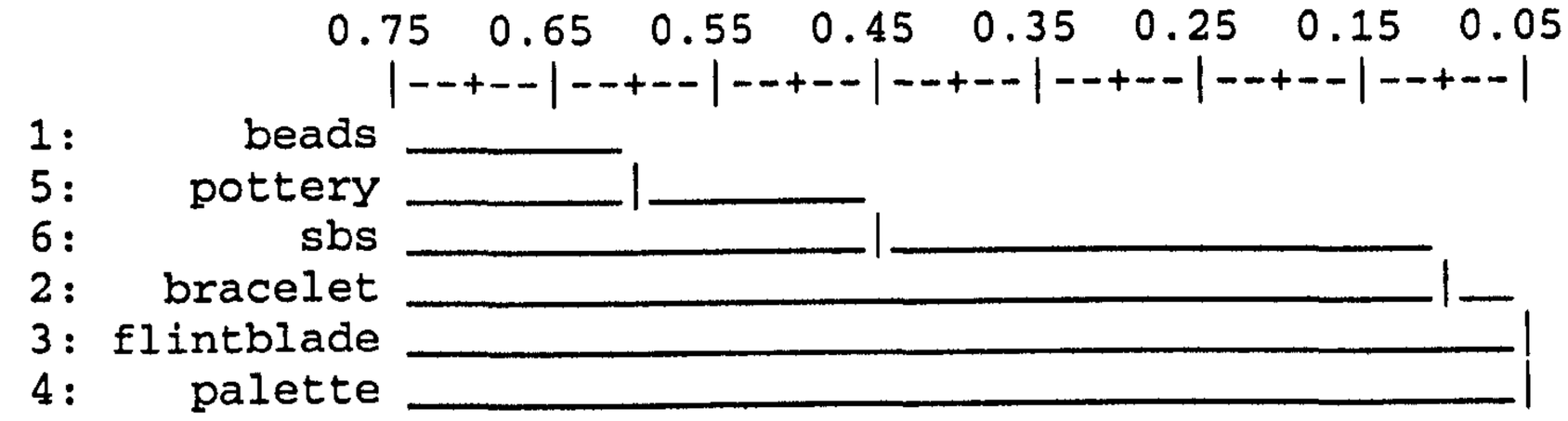


Figure 6.5: MAO Male population Single Linkage Dendrograms showing the relationship between groups of male associated artefact types

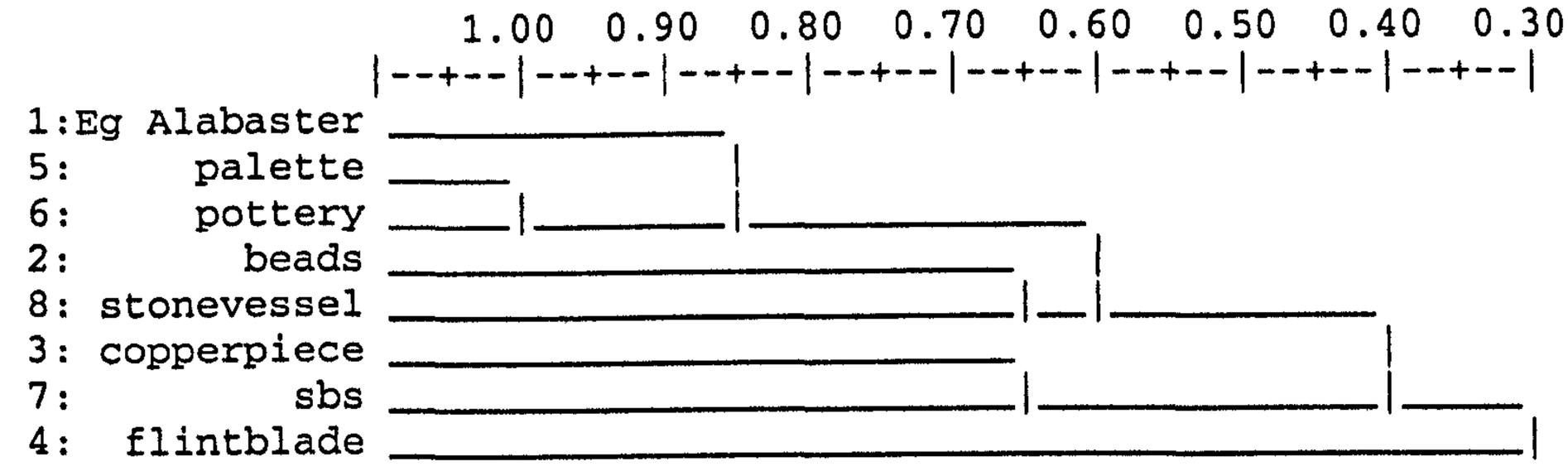
INDETERMINATE GRAVES

Single Linkage Dendrogram (maximum similarity)

MAO I-II



MAO III



MAO IV

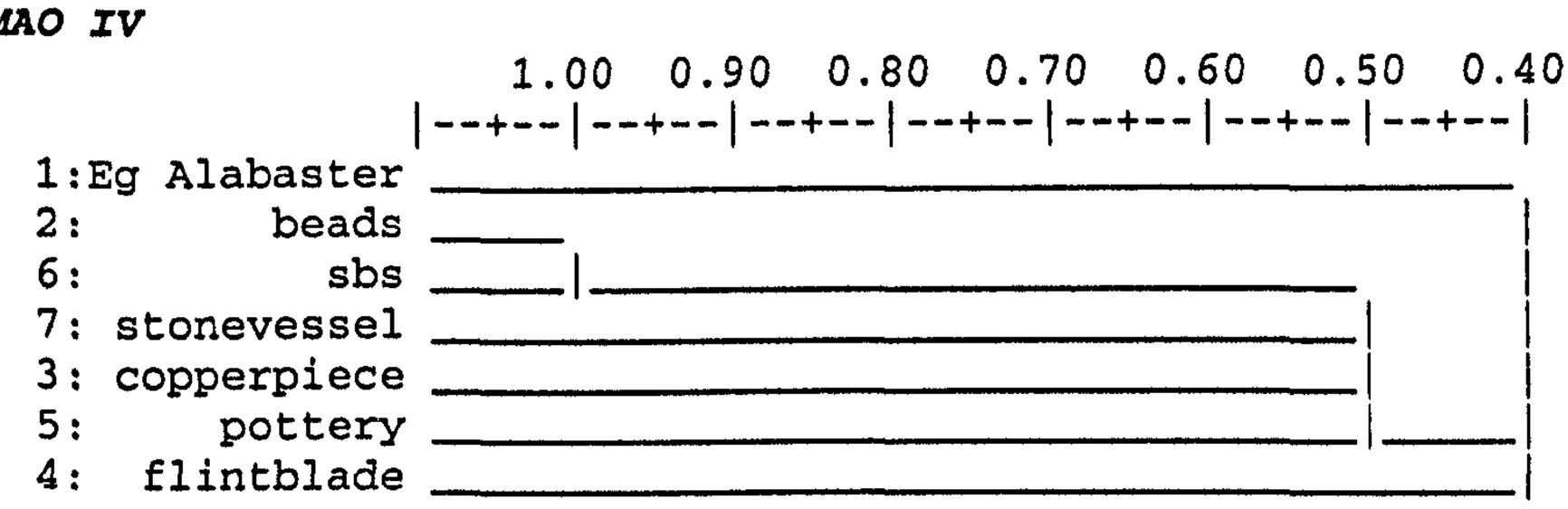


Figure 6.6: MAO Indeterminate sex population Single Linkage Dendrograms showing the relationship between groups of artefact types with no sex association

MAO I-II

Female

In MAO I-II the female population is split into three branches of artefact types, with the top associations closely resembling those seen in the stage one, part one analysis. Both bracelets and palettes are prominent within the female assemblage, and it will be seen below whether this prominence persists through the MAO phases. In addition, in the lowest group, a high association between stone vessels and bracelets can be seen, and *jaccard's* matrix confirms that stone vessels link to palette at 0.40. The separate clustering of Egyptian alabaster and palette seems to be quite significant in view of the length of the horizontal division between the upper and lower branches.

Male

In the male population, there are only five artefact types present due to the low occurrence of other objects, and these basically represent the same top five objects as seen in the lower branch of Figure 6.3 of the stage one, part one analysis. These types are beads, pottery, SBS, flint blade and flint knife. The items omitted due to low occurrence are copper knives, copper needles, pendants and stone vessels. It is notable at this stage that flint knife is only seen in the male and not the female population. The separation of flint blade and knife from the rest of the artefact types indicates their relatively rare occurrence.

Indeterminate Sex

In terms of the burials of indeterminate sex (of which 59% are children in MAO I-II), the results from MAO I-II show similarities to what we have seen in the analysis on sexed burials. The top chart in Figure 6.6 shows the similarly high position of beads, pottery and SBS. However, the presence of both palette and bracelet, are interesting, since both are items more closely associated with female burials during this earliest phase. Flint knives, associated with male burials during this period, have been omitted from this analysis due to low occurrence.

MAO III

Female

In MAO III the female population shows great similarity to the analysis carried out during stage one, part one, with the main difference being that Egyptian alabaster comprises a branch of its own, and links with the rest of the group at 0.65 (to pottery). In this analysis, the female burials are associated with twice as many artefact types as the males. Bracelets are still amongst the artefacts represented, retaining the close association with female burials identified in phase I-II. In addition, copper pieces appear within the female burial assemblage.

Male

The majority of the artefact types in the male population cannot be included within this stage of the analysis due to their low occurrence (copper chisels, knives, pieces, flint knives, SBS and stone vessel). They will be further discussed below and during stage two of the analysis (Section 6.2.2). It is interesting to note the occurrence of palettes within the male population during this phase. However, the long 'stalk' between this type and the rest of the group suggests low occurrence of palettes. The remaining artefact types are the same as the first four listed for both the female and unsexed burials in MAO III. The types that are included within the dendrogram, however, do show high levels of association for this period.

Indeterminate Sex

The results from the analysis on unsexed burials display similarity to the specifically female analysis, with the presence of palette retained, albeit not bracelets (as in MAO I-II), and flint blades have been omitted due to low occurrence. Copper pieces, however, are present within both female and unsexed burials. It might be significant that items associated with adornment (palette and beads) are clustered within the upper branch, and that the lowest branch is reasonably well separated from the upper two branches.

MAO IV

Female

Finally, in MAO IV, there is a notably close association between palettes and beads (items of adornment), beads and alabaster and SBS and alabaster. This is the only MAO phase where bracelets do not figure within the confirmed female sample being analysed. The data suggest a much stronger relationship between palettes and female graves than with male graves.

Male

For the male graves in MAO IV, there is a much higher association between the co-occurrence of copper chisels and pieces than was seen in the analysis of stage one. Female burials do not contain copper chisels, and apart from the data retaining a similarly high association between stone vessels and pottery, the groupings are quite different. Copper knives, an item only associated with male burials, are present during this phase, but, as in MAO I-II, are not included within the analysis due to their low occurrence. Flint knives however are not present within this latest phase of confirmed male burials. It is notable that palettes show no association with male graves in this final phase of the cemetery (all of those graves containing palettes have been published by Kroeper 1996). The presence of Egyptian alabaster within this phase seems particularly rare and it only links with the stone vessels at 0.33 and pottery at 0.16 (as confirmed by *jaccard's* matrix), there is no linkage at all with the other types of artefacts present.

Indeterminate Sex

The results from the unsexed burials prove interesting since although 60% of the graves are confirmed as child burials, there is only a slightly greater similarity between the female and the unsexed burials during this phase. There are no palettes or copper chisels (objects of strong male/female association) and the two artefact types deleted due to low occurrence, bracelets and flint knives, are associated with female and male burials respectively. As with the male group, Egyptian alabaster only links with pottery and stone vessels during this final phase.

Interpretation

Pottery and Egyptian alabaster are the two most common grave goods at KHD and KN, and in MAO IV, although not jointly so in the earlier phases of the MAO cemetery. Temporal contemporaneity may, therefore, be showing some homogenising affect on grave good patterning. The KHD material also correlates with MAO IV in terms of the linkage between stone vessels and pottery.

The MAO dendrograms highlight the differential groupings between the time phases. There are only two consistent associations that have more than one occurrence between these three phases. The relationship between beads and pottery is highlighted in each phase (0.50 and above), and that between palette and Egyptian alabaster occurs in the earliest time phases. In MAO I-II the upper branch grouping of the dendrogram represents the second most commonly co-occurring group of artefacts of the time phase, Egyptian alabaster, palette and pendant, with the most highly correlating objects being at the top of the lower branch. In MAO III the most common association is between Egyptian alabaster and stone vessels, whereas in MAO IV, the highest associations shown in the dendrograms remain consistent with those from the earlier phases of the MAO cemetery.

Female MAO	Egyptian Alabaster	Copper Chisel	Copper Knife	Copper Piece	Stone Vessel	Flint Knife	Beads	Pendant	Bracelet	Palette	SBS
I-II	4				11		20	1	2	3	21
III	29			7	2		9	1	3	15	11
IV	64			2	30		8	1		6	13

Male MAO	Egyptian Alabaster	Copper Chisel	Copper Knife	Copper Piece	Stone Vessel	Flint Knife	Beads	Pendant	Bracelet	Palette	SBS
I-II	7		1		1	6	10	1			26
III		5	3		1	1	3			2	1
IV	19	3	3	3	36						

Table 6.2i & 6.2ii: Artefacts types showing positive and negative associations with males and females

Tables 6.2i-6.2ii illustrate the artefact type groupings in which we find greater associations in terms of sex over the three phases at MAO. From these tables we can detect sex-specific associations, types showing some preference by sex, and types showing changing associations with sex (from the population sample being used). While the only item strictly associated with females is the bracelet, pendants show an

association with females that persists for the duration of the cemetery, and palettes have a much tighter association with females than males. Females also show a closer association with high numbers of Egyptian alabaster vessels and SBS items in the later periods of the cemetery's use, and yet a closer relationship with other stone vessels in the earliest phase. In terms of male burials, there are a greater number of male-specific types: copper chisel and knife and flint knife.

We, therefore, see a closer relationship with females and items associated with adornment, and with males and items that may be closely linked by function, or possibly related to ritual. This possibility will be clarified through further types of analyses in this chapter. It should also be stressed that both males and females appear to have lines of access to the same raw materials, but this access is expressed through the transformation of the material into various object types.

A further speculation from MAO at this early stage is the possibility of a close association between female and child burials in terms of artefact types. In terms of child burials, however, it must be noted that while they account for quite a high proportion of the indeterminate burials within the MAO I-II and IV samples, they only represent 18% of the graves in MAO III.

6.2.2 Data analysis stage two, part one (*iastats: socistat*)

The data are examined to assess variation in terms of artefact hierarchy between sites and between time phases at a site. The intention is to establish where similarities and differences lie in order to consider both availability and distribution of artefact types across and throughout the cemeteries, and to reveal whether certain sites might favour certain raw materials. It may prove useful in pinpointing variations in terms of preference by either sex. In addition, through considering the distribution of graves with various numbers of types, and various ranking of types, this stage of the analysis may assist in interpretation of the type of social organisation within the cemetery.

This analysis proceeded through implementation of the *socistat* function in *iastats*. *Socistat* orders all graves containing artefacts within a 'hierarchy' that is based on the presence of certain types of artefact. The relative weighting of the types is determined by their consistent occurrence in graves with a high or low number of artefact types.

Put simply, the type of artefact that most consistently occurs in graves with the highest number of artefact types will be ranked highest, and so on; *socistat* then orders the graves accordingly, with those containing the most highly 'ranked' artefact placed at the high end of the scale (regardless of the total count of types). It is less subjective than attempting to weight objects by how we consider them to have been valued at the time. We simply do not have enough information to assume relative values for given objects (see also Castillos 1998b, 27; 2000, 166).

The results of the analysis are output in chart form, some of great length. I will briefly recapitulate here on the reading of these charts (see Section 4.2.2, Appendix 2); where many '*' signs are found on the chart then this might suggest hierarchical structure within the data, but where these are frequently interspersed with dots, this implies the lack of hierarchical structure (C. Orton *pers comm.*).

In the examination of the results below, I will look at the distribution of graves of different quantities of artefact types at each site, and also look at the variation within the hierarchy of artefact types between sites. In the subsequent analysis (Section 6.2.3)

dealing with frequency distribution, I will consider the types of artefact in more depth in comparison between the sites, since there is some overlap between these two types of analysis.

Due to the lengthy nature of the chart output from *socistat*, some running over several pages, I have summarised the artefact ranking in a table shown below (Table 6.3), and have confined the actual charts to Appendix 2. Figure 6.7 provides an example of the *socistat* chart output. The table puts the sites of KHD, KN and MAO alongside each other, and shows the ordering of artefacts (by *socistat*). This table clarifies the inter-site differentiation in terms of artefact ranking, and for MAO, the intra-site differentiation between the time phases.

```
 1  Tomb_881    **........
 2  Tomb_340    **........
 3  Tomb_415    *...*.....
 4  Tomb_50     ***.......
 5  Tomb_673    **.*......
 6  Tomb_1287   *.**......
 7  Tomb_758    ***.*.....
 8  Tomb_1045   *.***.....
 9  Tomb_1666   **.**..*..
10  Tomb_400    *****...*.
11  Tomb_2200   *****..*..
12  Tomb_73     *****....*
13  Tomb_1455   ***.*.**..
14  Tomb_329    **.***..*.
15  Tomb_866    ***.*..*.*
16  Tomb_434    *****..*.*

                pbpstfpcsb
                oeabrleotr
                talsainpoa
                tde vndpnc
                est etaeee
                r t rbnrvl
                y e tltpee
                    ia ist
                   nd es
                   ee cs
                      ee
                       l
```

Figure 6.7: MAO III Female population *socistat* analysis, ordering the graves according to the presence of highly-ranked artefact types

RANK	KHD	KN	MAO I-II	MAO III	MAO IV
1	Faience Cones	Bracelet	Eg Alabaster	Bracelet	Pendant
2	Copper Wire	Pendant	Copper Knife	Flint Blade	SBS
3	Copper Knife	Palette	Stone Vessel	Pendant	Bracelet
4	Flint Knife	Beads	Palette	Copper Piece	Copper Knife
5	Bracelet	Copper Piece	Pendant	SBS	Flint Knife
6	Copper Chisel	Stone Vessel	Copper Needle	Eg Alabaster	Palette
7	Copper Piece	SBS	Flint Blade	Copper Chisel	Beads
8	Pendant	Eg Alabaster	Flint Knife	Copper Knife	Copper Chisel
9	Palette	Pottery	Bracelet	Palette	Copper Piece
10	Flint Blade		SBS	Stone Vessel	Flint Blade
11	Stone Vessel		Beads	Beads	Stone Vessel
12	Copper Needles		Pottery	Pottery	Eg Alabaster
13	Gold			Flint Knife	Pottery
14	Beads				
15	Eg Alabaster				
16	Pottery				

Table 6.3: Summary of *socistat* artefact ranking, showing the differences both between the sites and across time periods at MAO

No. of Types	KHD	KN	MAO I-II	MAO III	MAO IV
1	75.1%	63.5%	59.3%	8.8%	33.3%
2	10.8%	19.3%	20.6%	23.5%	15.2%
3	5.0%	7.5%	11.6%	11.8%	15.2%
4	5.6%	7.5%	5.2%	11.8%	12.1%
5	1.6%	1.1%	0.7%	11.8%	6.1%
6	0.8%		2.6%	29.4%	15.1%
7	0.8%	1.1%		2.9%	
8					3.0%
9	0.3%				

Table 6.4: Summary of *socistat* showing the percentage of graves at each site with a given number of artefact types

KHD

Most graves with artefacts at KHD (75%) contain only a single artefact type. The majority of these are, unsurprisingly, graves containing ceramics, although other artefacts do occur alone in a lower number of graves: Egyptian alabaster, beads, copper needles, stone vessels, and copper pieces. The socistat hierarchy of types (as defined above) for KHD is shown below in Table 6.3 (with 'rank' referring to the position in which socistat has ordered a given type), allowing for comparison with the other sites. The percentage distribution of the number of artefact types found in graves across the sites is also given below in Table 6.4. The only occurrence of gold is at KHD, and this is notably low in the

rankings. This is explained, perhaps surprisingly, by the only occurrence of solid gold objects being in a tomb of four artefact types.

KN

The majority of graves with artefacts, as at KHD, contain only ceramics (63.4%). There are no other artefacts that appear alone as grave goods. The hierarchy of types is given in Table 6.3 and the percentage distribution of artefact types is shown in Table 6.4 above.

MAO

Looking to the MAO cemetery, during the I-II phase, the percentage of graves with only one artefact type is lower than at KHD or KN, but by MAO III and IV, entirely different patterns of distribution are recognisable. During MAO III, the highest percentages fall within the categories of two and six artefact types, with a fairly even distribution between the other categories, and among the MAO IV graves the highest frequency distribution is with the single artefact type with, again, a more even spread between the other categories, albeit slightly lower for graves with five and eight types.

6.2.2.1 Stage two analysis, part two: age and sex association

RANK	MAO I-II		
	Male	**Female**	**Indeterminate**
1	Stone Vessel	Eg Alabaster	Stone Vessel
2	Copper Knife	Pendant	Pendant
3	Copper Needle	Palette	Palette
4	Flint Knife	Stone Vessel	Bracelet
5	Flint Blade	Bracelet	Flint Blade
6	Pendant	Flint Blade	SBS
7	SBS	Copper Needle	Beads
8	Beads	SBS	Flint Knife
9	Pottery	Beads	Pottery
10		Pottery	

Table 6.5i: Summary of *socistat* artefact ranking for males, females and indeterminate burials during MAO I-II

RANK	MAO III		
	Male	**Female**	**Indeterminate**
1	Copper Chisel	Bracelet	Copper Piece
2	Copper Knife	Stone Vessel	SBS
3	Copper Piece	Copper Piece	Flint Blade
4	Eg Alabaster	Pendant	Eg Alabaster
5	Palette	Flint Blade	Beads
6	Beads	Eg Alabaster	Stone Vessel
7	SBS	SBS	Palette
8	Pottery	Palette	Pottery
9	Stone Vessel	Beads	
10	Flint Knife	Pottery	

Table 6.5ii: Summary of *socistat* artefact ranking for males, females and indeterminate burials during MAO III

RANK	MAO IV		
	Male	**Female**	**Indeterminate**
1	Copper Knife	Pendant	Bracelet
2	Copper Chisel	Copper Piece	SBS
3	Flint Blade	SBS	Beads
4	Copper Piece	Flint Blade	Flint Knife
5	Pottery	Palette	Stone Vessel
6	Stone Vessel	Beads	Copper Piece
7	Eg Alabaster	Stone Vessel	Flint Blade
8		Eg Alabaster	Eg Alabaster
9		Pottery	Pottery
10			

Table 6.5iii: Summary of *socistat* artefact ranking for males, females and indeterminate burials during MAO IV

In this sub-section I will concentrate largely on the data from MAO, due to the limited age and/or sex data from the other sites.

Tables 6.5i-6.5iii highlight the differences in artefact ranking when the population at MAO is broken down into males, females and burials of indeterminate sex. There are a number of key differences apparent from the tables. In MAO I-II it appears that in both the female and indeterminate burials, items of adornment are highly ranked, whereas possibly more functional items such as flint blade and copper needle are at the lower end of the scale. The reverse is true for the male burials. The similarities are clear in terms of low-ranked items and for highly-ranked object types. It is also interesting to note that only the females are represented with Egyptian alabaster vessels, which are on par in ranking terms with other stone vessels among the indeterminate and male burials.

From the MAO III sample, a number of differences are apparent, with items of adornment now spread throughout the list, and in the middle of the male artefact ranking. It is interesting to see copper items consistently highly ranked in all three groupings, and both Egyptian alabaster (now apparent within each category) and stone vessels, with the exception of females in the case of the latter, occurring lower on the overall ranking. One further point to highlight is that two items with close association by sex, the palette for females and the flint knife for males, are now ranked much lower than in MAO I-II, signifying their association with graves containing fewer types.

By MAO IV, the pattern of ranking is similar to MAO III, although we now see that vessels of Egyptian alabaster and other stone types have become further associated with graves of a wider range of total types than before. Items of adornment seem to slightly rise within the ranking, and are notably absent from male graves. As before, in MAO I-II, they are once again more closely associated with burials containing a higher number of types.

No. of Types	MAO I-II			MAO III			MAO IV		
	Male	Female	Indeter.	Male	Female	Indeter.	Male	Female	Indeter.
1	38.9%	58.8%	65.7%	14.3%		18.2%		16.8%	60.0%
2	25.0%	17.7%	22.8%	42.8%	14.3%	18.2%	16.7%	8.3%	20.0%
3	22.2%	5.9%	8.6%		14.3%	9.1%	50.0%	8.3%	6.7%
4	8.3%	5.9%	2.9%	14.3%	14.3%	9.1%	16.7%	25.0%	
5	2.8%	2.9%		28.6%	7.1%	9.1%		8.3%	
6	2.8%	8.8%			42.9%	36.3%	16.7%	25.0%	13.3%
7					7.1%				
8								8.3%	
9									

Table 6.6: Summary of *socistat* showing the percentage of graves for male, female and indeterminate burials with a given number of artefact types (MAO phases)

During the earliest phase of the MAO cemetery we can detect a slightly higher correlation between male graves and a greater number of artefact types (Table 6.6). However, by the next phase, MAO III, the highest proportion of female graves is found with a high number of types (six), whereas there are no male graves with this many types. Despite small samples for the later MAO phases, the evidence from MAO III would nonetheless indicate wider access to a greater range of artefact types by women, in contrast to the evidence from the previous phase. By MAO IV, the artefact spread for graves of either sex is more even, although males are not found with single types, and females are still associated with higher numbers of types than males.

The evidence displayed in Table 6.6 strongly suggests certain dynamics coming into play in terms of the gender differential. MAO III shows the highest percentage of very rich graves (females), which might indicate greater access to goods and/or different materials. However, MAO IV appears to represent both more tiers within the hierarchy, with a more even division between the artefact type ranges, and a higher proportion of female than male graves with a high number of types. This might suggest a change in gender dynamics over the latter two phases of the community, which will be investigated further in Section 6.2.4 in order to ascertain whether males command greater access to non-local materials through external contacts.

There are also a number of graves of indeterminate sex. For MAO I-II this represents 53% of the population, for MAO III 32%, and for MAO IV 45%. It is important to assess

these graves to see the degree of variation in comparison to those graves of confirmed sex. For the earliest MAO phase the picture presented by the analysis on the unsexed burials is broadly similar to both the male and female results, although slightly more akin to the female group, with graves of one and two types most strongly in evidence. In phase III the number of graves with six types is strikingly close to the female percentage, but the rest of the unsexed graves do, however, fit the picture for the distribution of both male and female burials. The picture for IV, however, is different since it rather resembles the distribution of I-II, with a clear majority of graves having single artefact types. Broadly speaking, the group of unsexed burials display more commonalities to the known female burials than the males.

Reference to the age of the individuals should also be made here, since a high proportion of the unsexed burials during MAO I-II are unsurprisingly child burials. Two of the three items associated with female burials, palette and bracelet, are found within the graves of children and in one case a palette is found with a young adult (18-25 years of age). The flint knife, however, the one item at this stage showing a strong male preference at MAO, is found with a 20-60 year-old adult. In MAO III, one grave of a 13-14 year-old child is also found with a palette, and in MAO IV the very rich child's grave (2275) is found with a various artefact types, including bracelet and beads.

The variability of actual type distribution between male and female, and unsexed graves also requires discussion here. Artefacts unique to females within the *socistat* analysis for I-II are Egyptian alabaster, palette, and bracelet; those artefacts unique to males are copper knife and flint knife. In terms of those graves of indeterminate sex it is important to see what trends are reflected, and how the analysis of the sexed data might be affected by the omission of the unsexed. There are no great differences in terms of the associated artefact types in unsexed graves, so the sexed graves are robust to the extent that they are representing the full scope of artefacts present at the cemetery during this time phase. It is noteworthy, however, that in terms of the spread of artefact types a higher proportion of female burials might be inferred from the indeterminate burials, since while both palettes and bracelets occur within these burials (items strongly associated with females) only a single occurrence of male-associated item, a flint knife, occurs with an unsexed burial

during this earliest phase. During phase III, male burials retain their association with flint and copper knives, and are also associated with copper chisels (or adzes), and females retain their association with palettes and bracelets. In this regard, the indeterminate population does not contain any specifically male-associated items. In the final phase, MAO IV, the picture is a little different with the only occurrence of a flint knife within the indeterminate burials strongly suggesting a male link. Females only retain their close association with palettes, although it is noteworthy that females, and not males, have association with pendants during MAO III and IV. The male-only association with copper knives and chisels is retained.

Next, I shall consider the data from the perspective of age, and then look again to the indeterminate burials to assess why they appear represent the females more strongly than the males of the population sample. A number of interesting changes are evident between the phases in the MAO cemetery, and there is considerable difference in the provisions for individuals of different ages within phases. In phase I-II neonates and babies aged up to 12 months are only associated with single types, whereas child burials have up to four types, and teenage children are also found with five and six types of artefact (Kroeper 1994; Kroeper and Wildung 1994; 2000). Adult burials of all age ranges occur with a variety of numbers of types (Kroeper and Wildung 1994; 2000).

In MAO III, neonate burials still contain only one artefact type but are joined by the elder members of the community, those with an upper age range of 60 years (Kroeper and Wildung 1994; Kroeper 1994, 23). There is only one child burial, which has as many as six types, with the rest of the adult burials range between two and seven types, notably not associated with single artefact types (Kroeper 1994; 1996; Kroeper and Wildung 1994; 2000).

By MAO IV, all of the graves with four types and upwards are of adults aged between 20-40 years, with the one exception of a nine year-old child, the richest grave in the cemetery (Kroeper 1992, 135-136). The oldest age groups, as is the case for children, are found with only between one and three types (Kroeper 1992, 137-138; Kroeper and Wildung 1994; 2000). Neonates are still only associated with single types of artefact, and graves

of all other adults have a range of between one and eight artefact types (Kroeper 1992; 1996; Kroeper and Wildung 1994; 2000).

Interpretation

Table 6.3 shows a number of similarities between KHD, KN, and MAO phase IV, which is what we might expect given the chronological proximity of these phases. Broadly, the KHD and KN lists are quite similar with only a little internal differentiation. It is interesting to note that in all three cases items of close female association at MAO (bracelets and palettes) occupy relative positions within the artefact ranking. Copper artefacts also seem to be weighted similarly, being spread throughout the ranking at KHD, and MAO III and IV, and ranked in the middle at KN. A direct comparison with KHD and MAO IV suggests that while during MAO IV copper artefacts have a lower correlation with graves of a higher number of artefact types than in MAO III, it is at KHD where copper is most widely distributed. This suggests that copper was either more commonplace at KHD, or certainly not restricted to richer graves. Further discussion into specific artefact types and materials in the following section (6.2.3) will assist in resolving these issues.

The items of low artefact ranking are fairly consistent between KHD, KN and MAO IV, but there is quite a striking change in the distribution of stone vessels (including Egyptian alabaster) between the MAO phases. What are clearly rare objects during the earliest phase of the cemetery, gradually become more common in MAO III, and then by MAO IV join pottery as the most common types. One class of materials, representing two artefact types, does display more similarity during opposing chronological phases. The material type is flint and the objects knife and blade. In this respect, KHD is more comparable to MAO I-II than the later MAO cemetery, both in terms of the quantity of items and their position within the artefact ranking (on the available population sample at MAO). It is of interest since it shows the changing importance and frequency of given objects, and suggests the changes in 'fashion', access to, or importance of various materials over time.

This raises an interesting discussion, and begs for further deliberation upon how similar or dissimilar the types of social organisation were during the MAO I-II community and KHD, despite their chronological differences. We might be looking at a transient population, since there may have been a break between the MAO I-II, and III and IV cemetery populations, as exemplified by the lack of '"transitional" graves' at MAO (Kroeper 1987, 82). Other possible explanations may include there being a time lag between areas in terms of the development of funerary ideology, or a community with less external contacts through which to acquire certain raw materials and/or finished objects, or a community held back by the presence of a stronger, more dominant centre in close proximity.

Again, we can investigate the contents of graves of indeterminate sex to check the distribution and ranking of artefact types to see what we might be able to infer. From Tables 6.5i-iii, the unsexed burials display more similarities to the ranking of artefacts in female burials, than male, although this does not extend into MAO IV. In both MAO I-II and IV male-specific items are found. As seen in MAO I-II, the unsexed graves display more characteristics of female than male burials. However, it is still possible to see that the artefacts represented in the graves of undetermined sex are representative of both those associated with males and females. In terms of artefact ranking, it is also possible to say that similarities with both male and female graves are observable, and that this similarity heightens in general throughout the MAO phases.

The items unique to the male population stand out as copper chisel and knife, which have retained a consistent male-only association within the MAO population sample being analysed. Females maintain their strong association with palettes, and by MAO IV these are found only in female graves (Kroeper 1996, 82); indeed Fattovich (1979, 215) notes of 'Naqadian' graves that palettes are usually buried with women.

Overall, whereas MAO I-II suggests a ranked society, with a large proportion of less well provided for graves, and a minimum number of well provided for graves, MAO III suggests a degree of stratification. The MAO IV data also expresses a stratified society, albeit with a greater number of tiers than during MAO III. However, doubtless there is a

change from III with the widest and highest range of types represented more evenly through the sample population. From the *socistat* charts (Appendix 2) the difference in pattern between the three phases is clear. In MAO I-II the '*'s are well interspersed with dots, suggesting lack of hierarchical structure, in MAO III the chart is filled with '*'s, and by MAO IV, whereas the '*'s are no longer so dense, as I have explained earlier, more levels within the hierarchy might be reflected. Phase IV includes the eight elite tombs of MAO, which have a significantly higher proportion of grave goods, types, and architectural development/effort than is seen before in the cemetery (Kroeper 1992). This may point to the potential for multiplication of hierarchy, as discussed in Section 3.2.1 (McGuire 1983, 106), and there would appear to be a higher number of subgroups possibly reflecting a lesser degree of overall inequality. However, as the picture unfolds through the analyses discussed in Sections 6.2.3 and 6.2.4.1-3, as the data are examined from different angles, it will be possible to see whether this initial perception of societal change persists.

From the analysis in this section and Section 6.2.1, a number of sex-associated artefact types have become apparent, as detailed above. It is recognised and appreciated that trying to ascribe sex to individual graves on the basis of the presence of a single artefact type with close gender associations is to create a somewhat tenuous link. Therefore, in an attempt to take a more realistic approach, the unsexed graves from KHD and KN will be observed throughout the analyses in Sections 6.2.3-4 for any indications in terms of the presence of a group of sex-specific functional types, from the associated evidence at MAO.

The results from this section would suggest that the provisions accorded to elder members of the community actually decline over time, that child burials remain fairly constant in their provisions, and that the widest scope is continually for adult burials. This shows interesting patterns at various stages of life, with the greatest scope in provisions being for adults, but not the very young and the very old. Only about 25% of the burials in MAO I-II in the 'top' 30 positions are of children, MAO III only has one child represented at all, although with six types of artefact, and in MAO IV, only four child burials (out of a total of 22 burials with one+ artefact) have more than just a ceramic

vessel. There does not, however, appear to be strong evidence suggesting that particular artefact types are more common in child burials, although 50% of the bracelets in MAO I-II are with children, and the only bracelet in MAO IV is associated with a child burial; at KHD, however, there is one multiple burial of an adult woman and child, where the child is associated with copper fishhooks, a shell necklace and a pendant, one of only eight pendants found at KHD (cf. Mizoguchi 1992, 44). These observations are comparable to those of MacDonald (2001, 707), as discussed in Section 3.3, who suggests that if we can see grave goods as reflective of grief, it is young adults, and not the very young or very old that reflect the greatest feelings of loss through the medium of burial. As noted above, during MAO I-II, it is the teenage children who are provided with a greater number of types than the younger children. This would be expected for the very young or still born, since it is considered in many cultures that babies have to reach a certain age before being considered fully-fledged members of the communities. As an aside, Crubezy (2001, 17) mentions also that in terms of 'still born infants who were less than nine lunar months old', burials were made in vessels of a tiny size. Regarding the elders, Crubezy (2001, 18) makes an interesting point concerning this stage of life, since he theorises that the 'first offering' in the grave related to the individual's importance, and the last to their status. It might be possible to extend this here to suggest that in the case of elderly individuals, their importance within the community had already been established and that their status was either not something that required confirmation, or that at a given age they no longer held certain positions that both provided status and required enforcement of that position.

6.2.3 Data analysis stage three, single variate *(Excel)*

Single variate analysis is carried out in this section in order to build up a picture of the:

a) Distribution of each artefact type
b) Symbolism attached to the presence/absence of given variables
c) Distribution in terms of totals of goods and types
d) Distribution in terms of types of grave architecture
e) Distribution of different types of bodily orientation, to assess changes in the ideology of belief systems
f) Distribution of potmarks, which may suggest the need for greater organisation, re-distribution and the implementation of a recording system beyond that of human memory

This analysis is employed to return more specific details concerning the distributional behaviour of individual variables

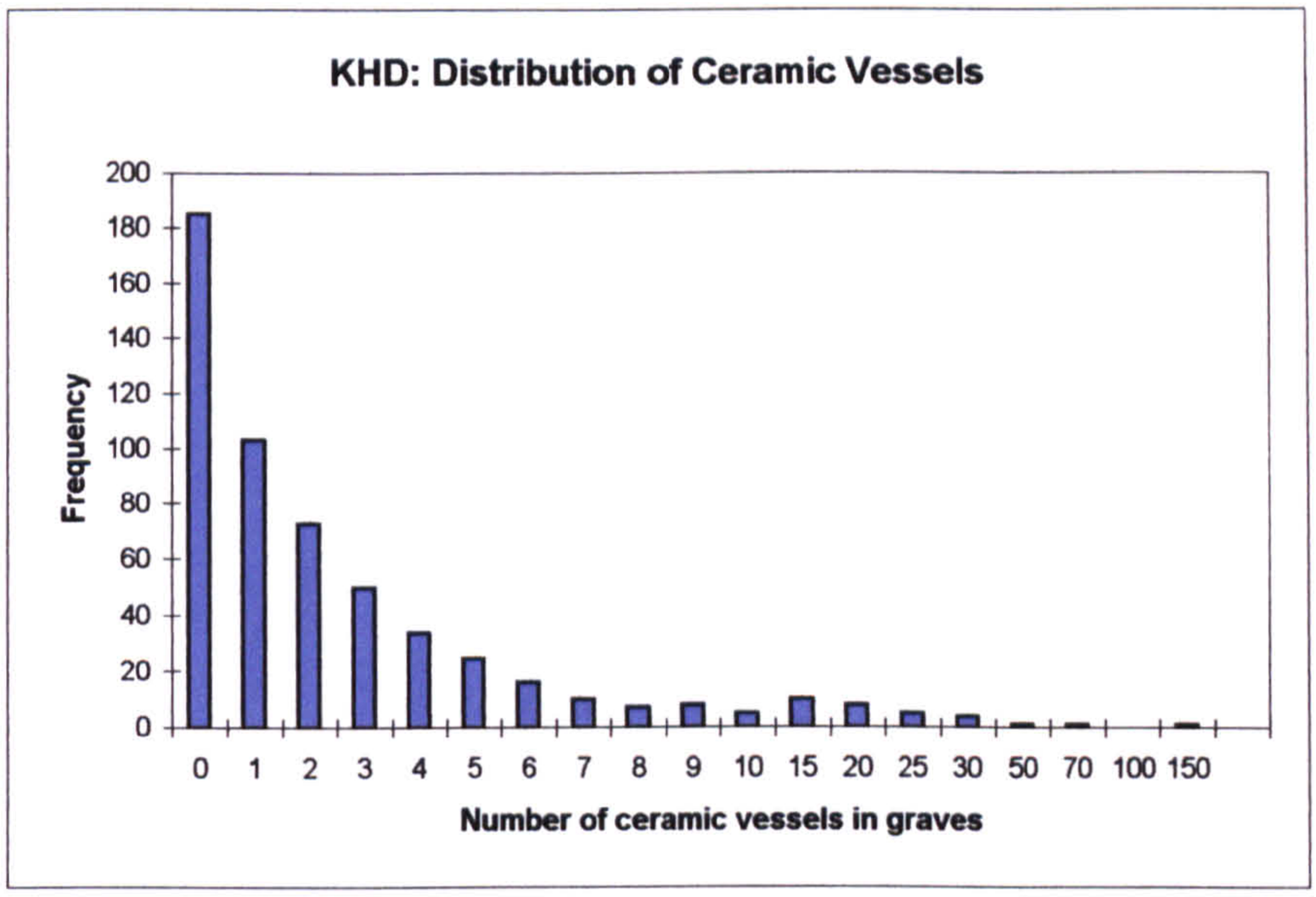
a) Between sites
b) Between time phases
c) On an age/sex basis

It is used in order to look closely at issues of social differentiation in terms of both totals of goods and the distribution of different types of raw materials. By noting the variations on an inter- and intra-site basis, it will allow me to make inferences concerning:

a) The types of social differentiation displayed at the sites
b) The social development they imply (see Section 3.2 for details on terminology)
c) Why the sites may be expressing different types of social differentiation and ideology through burial practice, and the timing of changes vis-à-vis social and political developments occurring elsewhere in Egypt at that time.

This analysis is conducted using *Excel* Data Analysis, with output in bar charts and cumulative frequency curves. The frequency distribution bar charts have been run both on a logarithmic and an ascending numerical scale (see Section 4.2.3). The analysis, at this stage, is not divided in chart form by sex. However, the intention is to include,

within the discussion, items displaying a higher correlation with either male or female burials in the analysis carried out thus far. In the fourth stage of analysis, sex and age are included within the bivariate analysis.



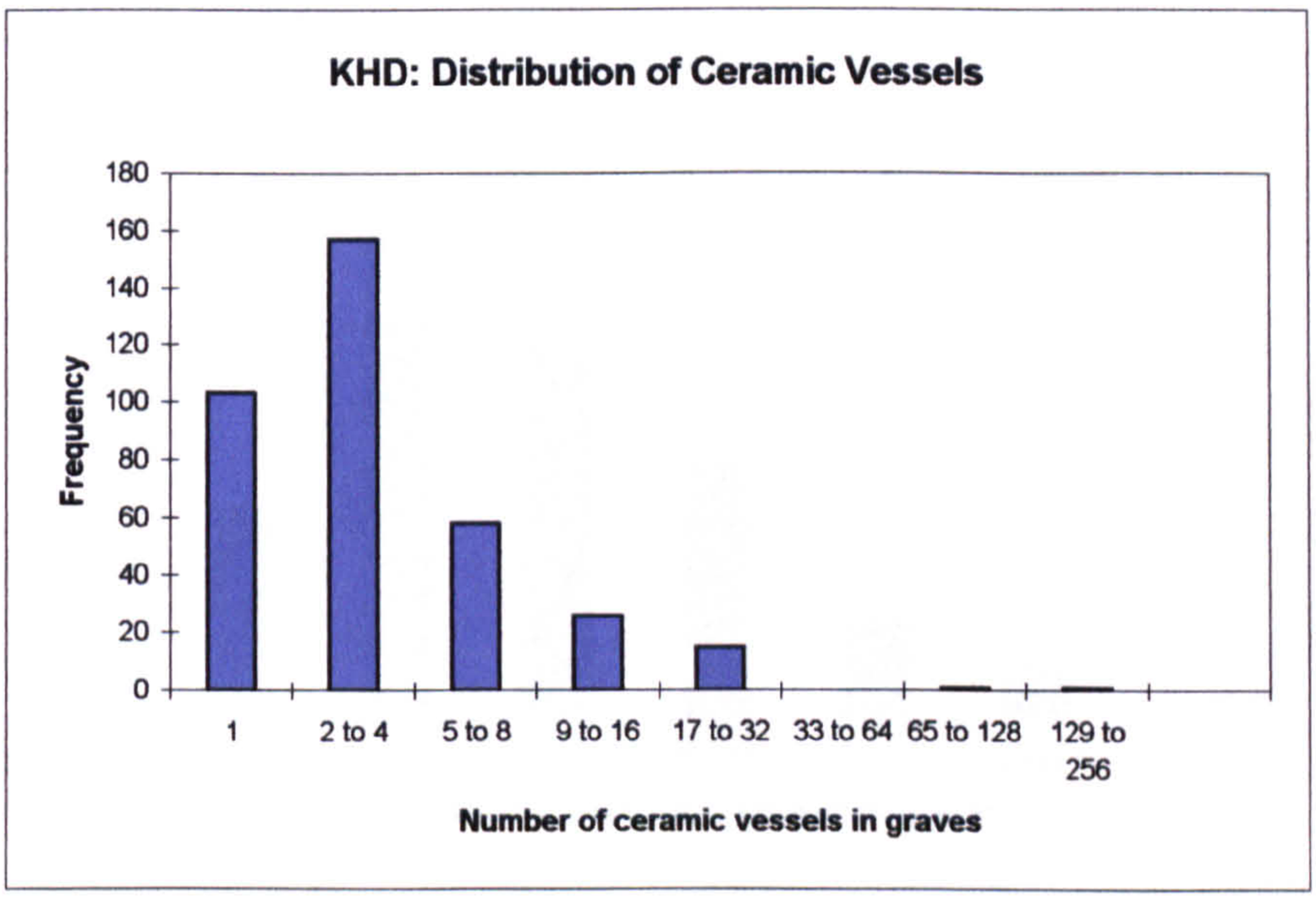
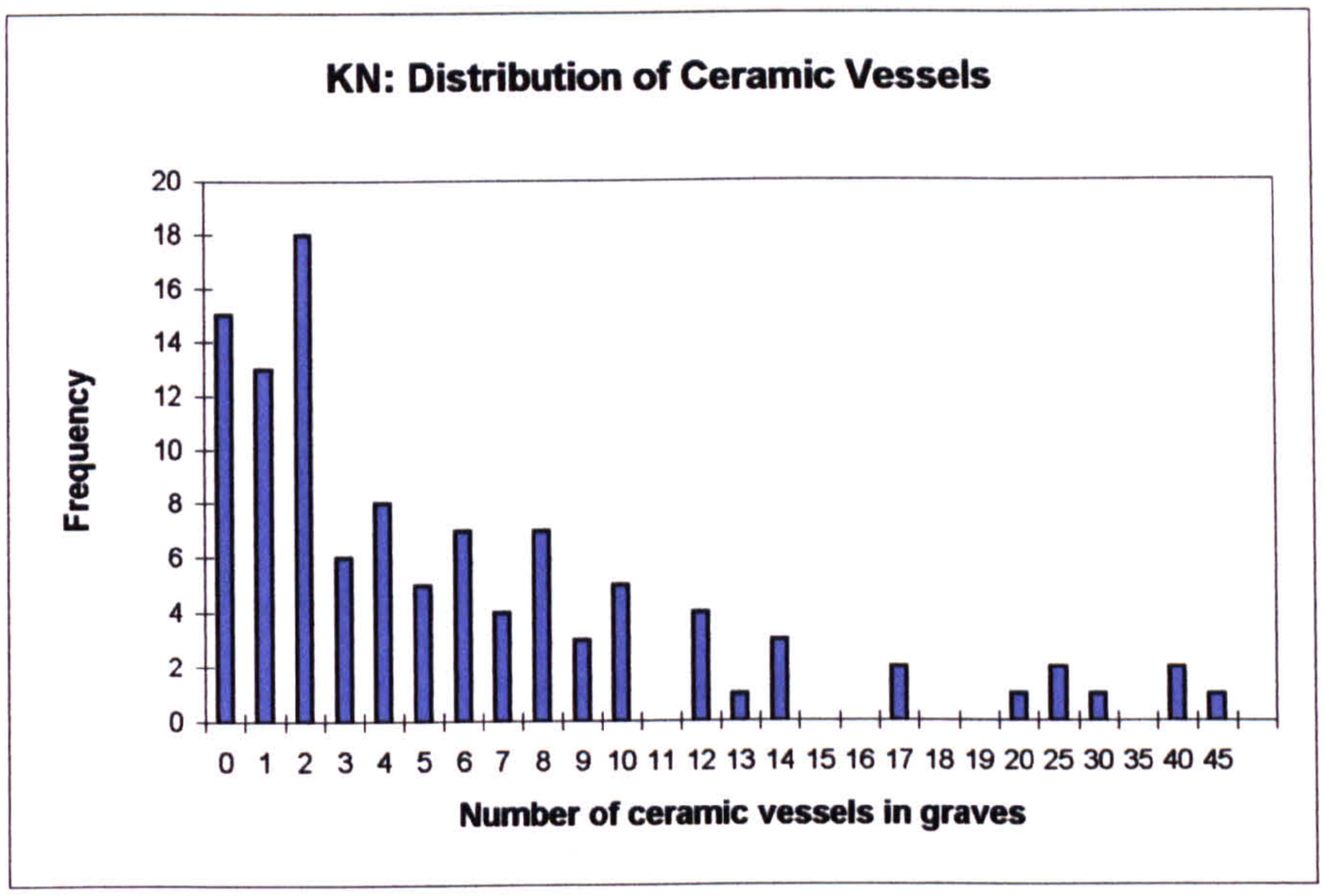


Figure 6.8: KHD Frequency Distribution of Ceramic Vessels



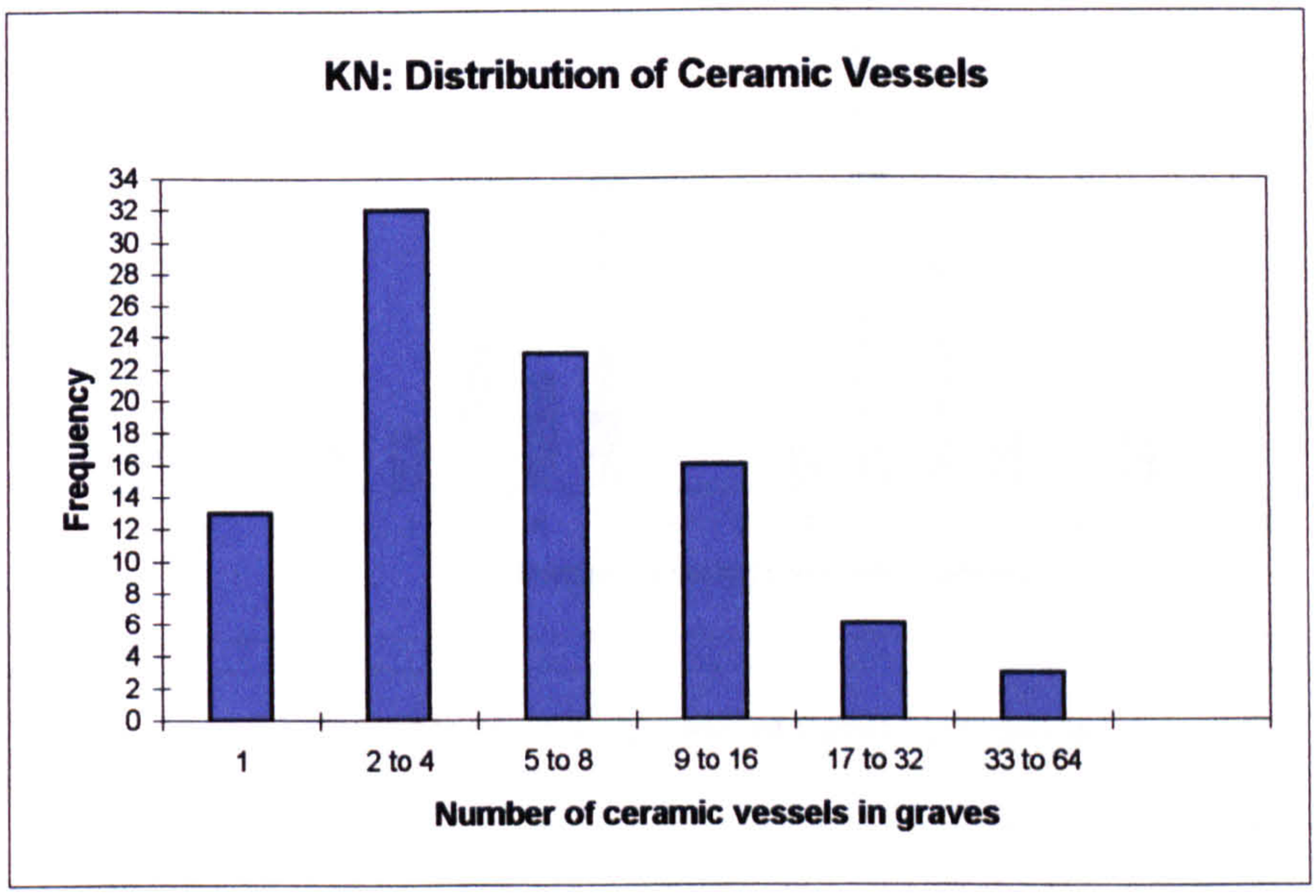
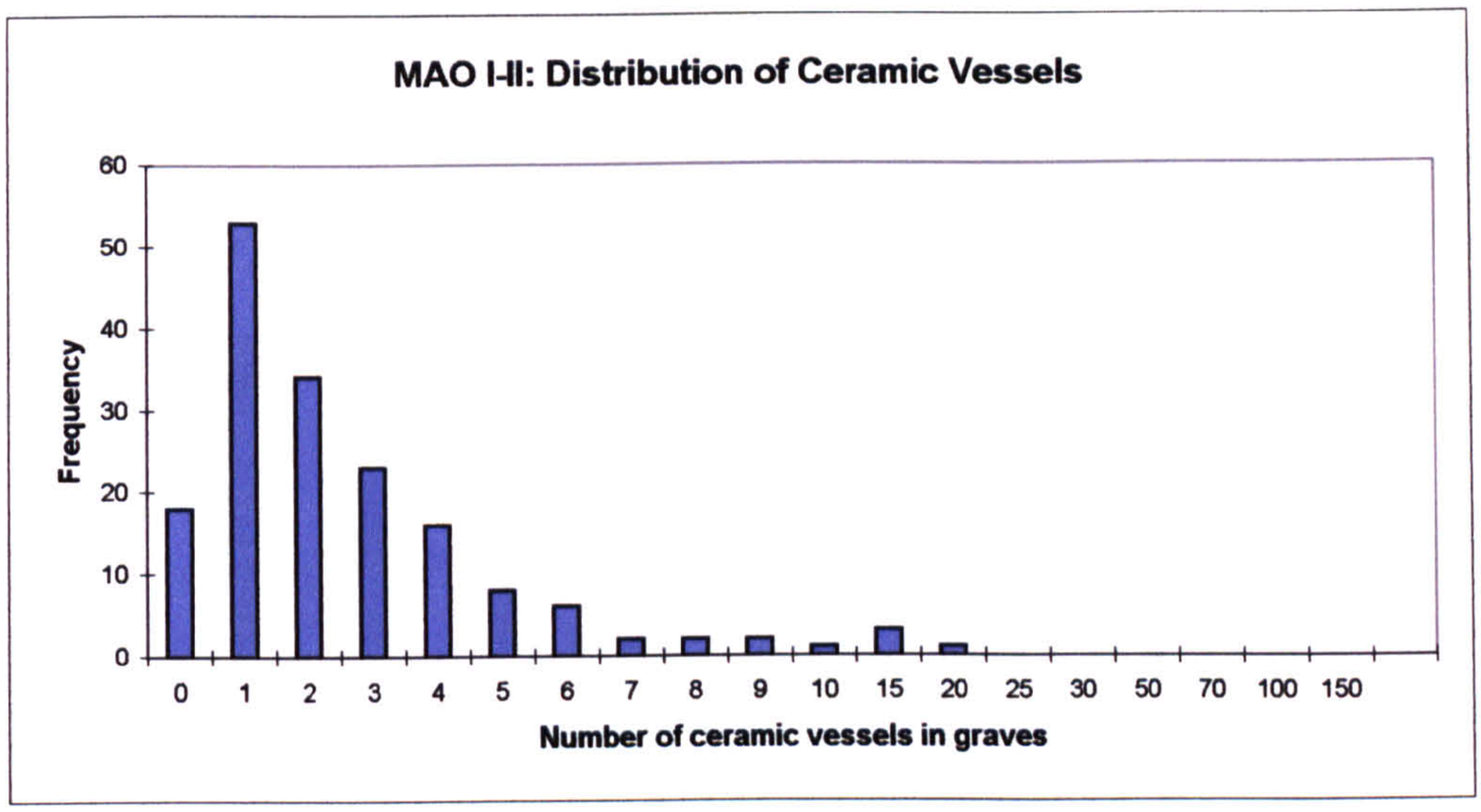
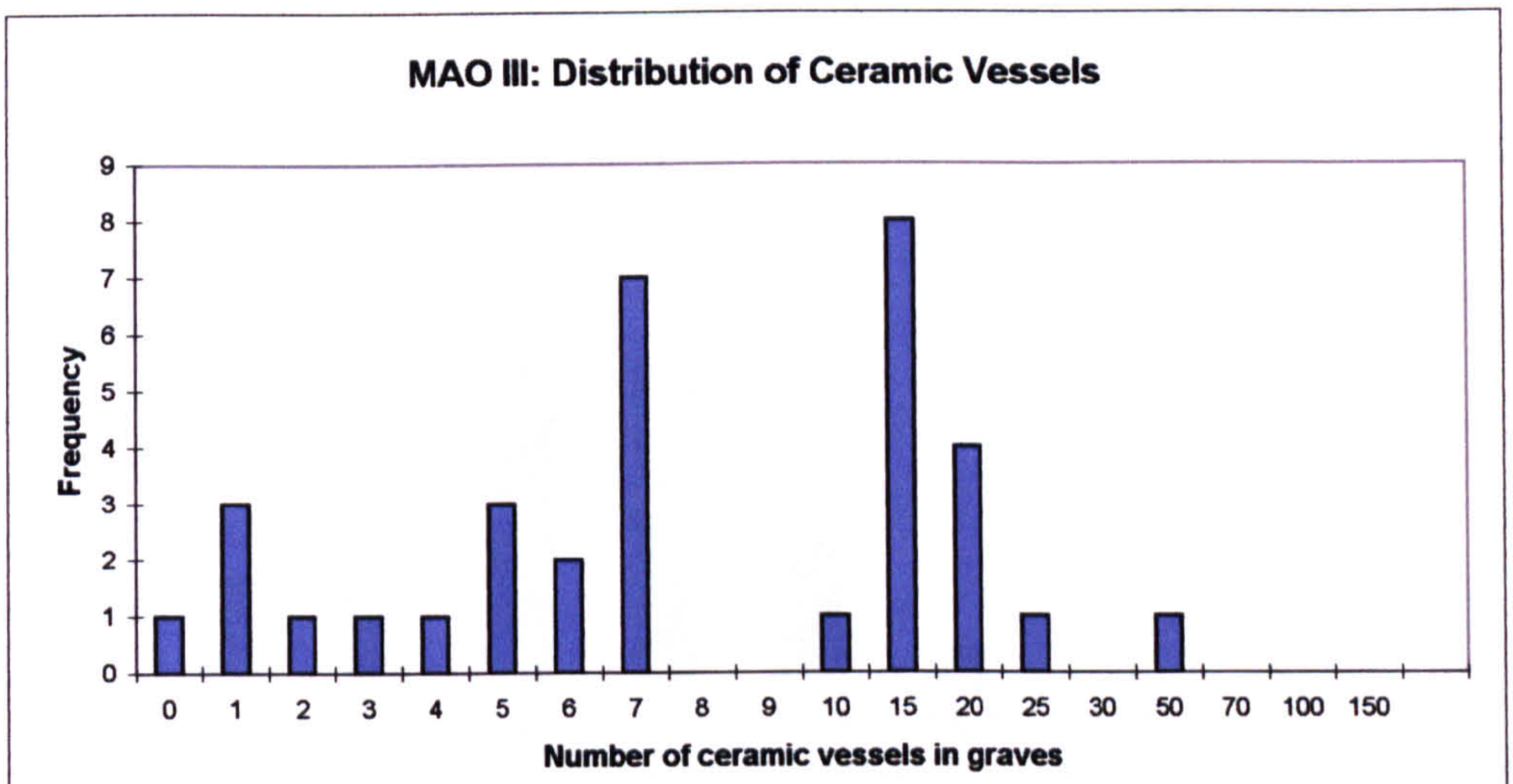


Figure 6.9: KN Frequency Distribution of Ceramic Vessels





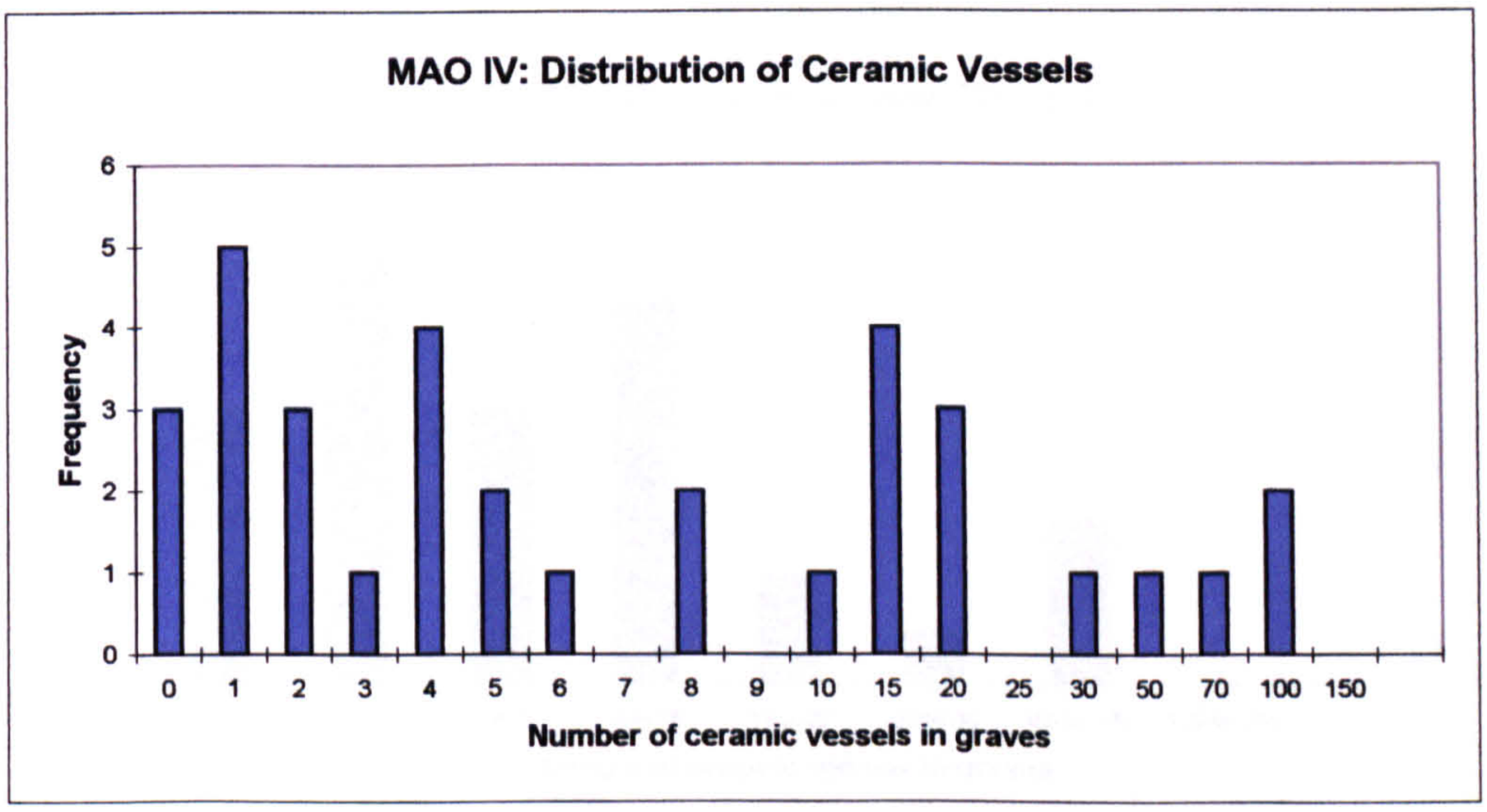
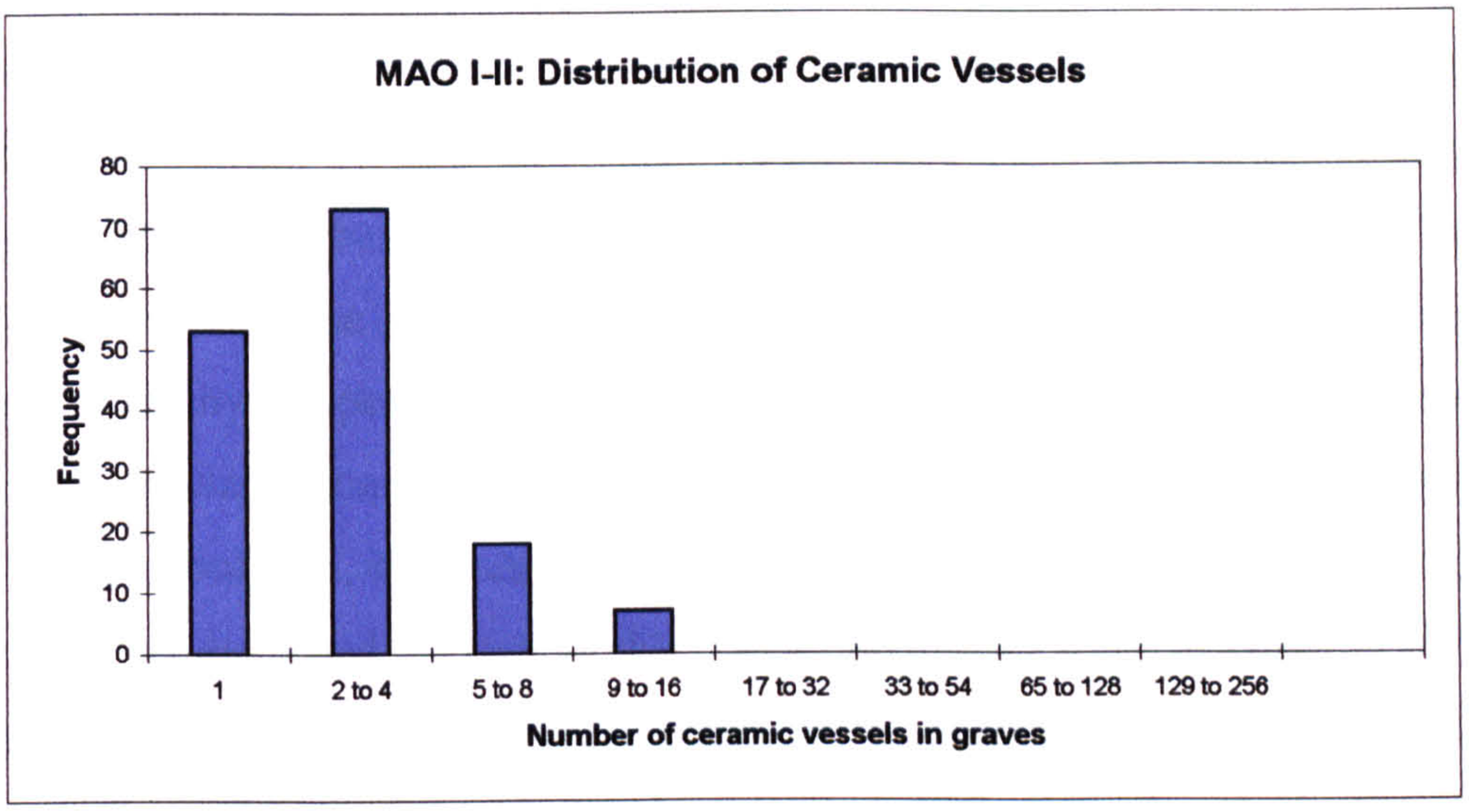
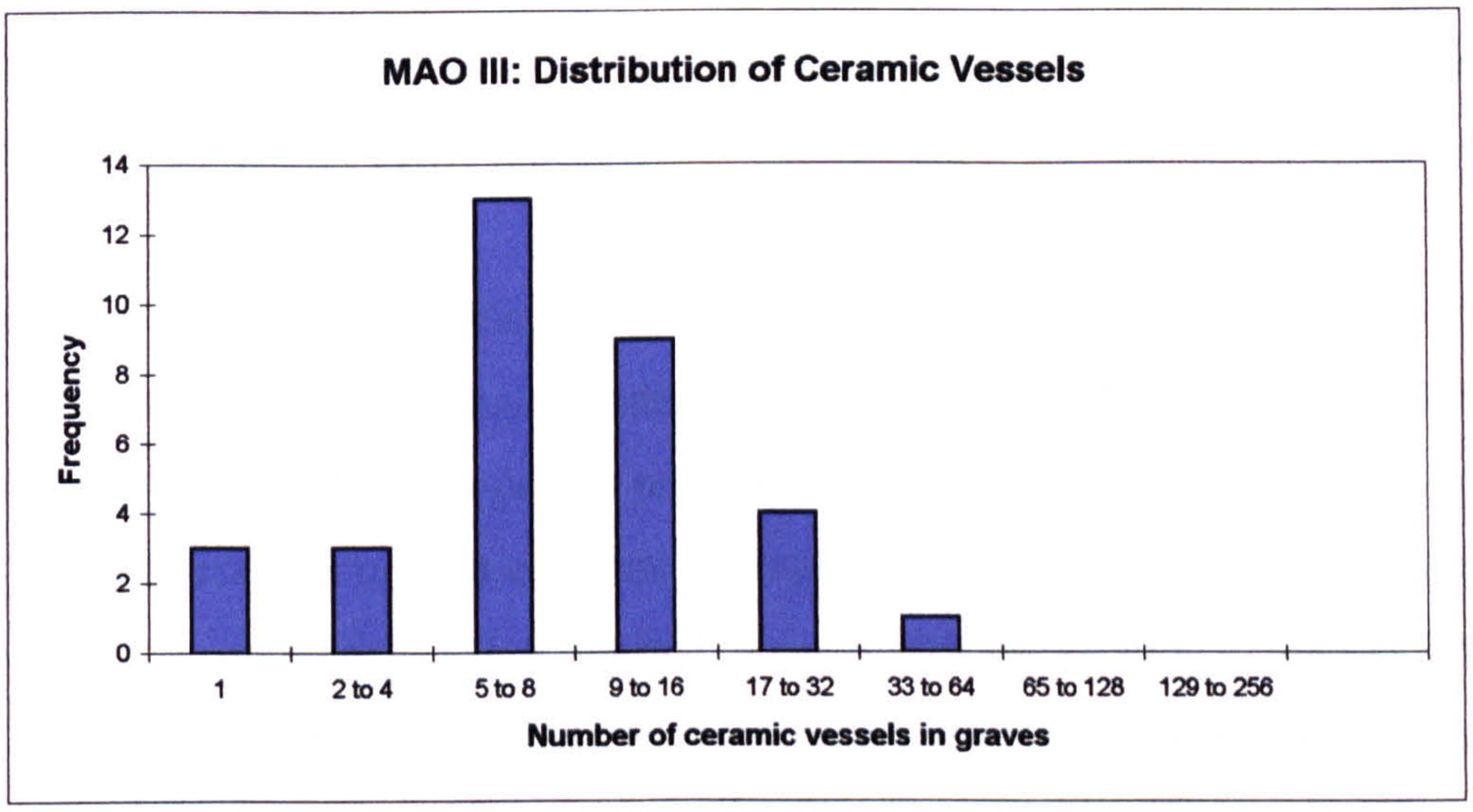


Figure 6.10: MAO Frequency Distribution of Ceramic Vessels





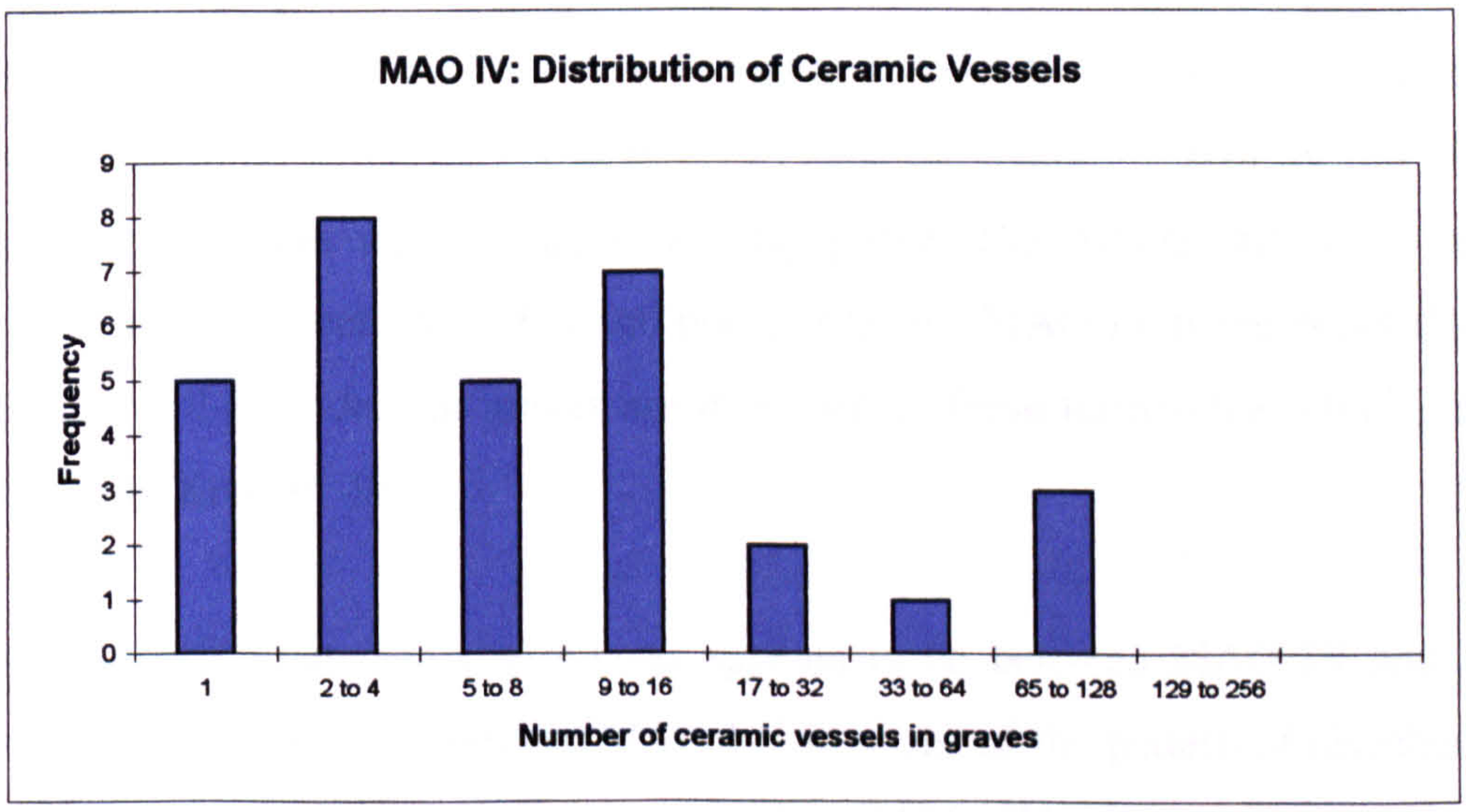


Figure 6.11: MAO Frequency Distribution of Ceramic Vessels (log charts)

Frequency Distribution of Ceramic Vessels

Ceramic vessels are, by a large margin, the most frequently represented type of grave good at the sites investigated here, and indeed throughout Egypt. The variety of forms is great, ranging from small beakers and bowls to large storage jars and wine jars (Figures 6.63-6.64). There are some more infrequent ceramic types, for example, bread moulds, which may be worthy of special note in view of the connection with the beer 'industry' and increasing specialisation, as discussed in Section 2.3. Pottery vessels were widely available to the population, and more importantly locally available. Many of the grave good types that are discussed throughout this chapter originated some distance away, so it is not surprising that the majority of grave goods are accounted for by local ceramics. It is quite clear from Figures 6.8-6.11 that in most instances there is a preference for a greater number of graves with few or single ceramic vessels, and a fewer number of graves with larger quantities of ceramics.

In terms of totals of ceramic vessels per grave, the MAO I-II cemetery shows the lowest total (16) of all the cemeteries being considered here. This may indicate, in comparison to the other MAO phases, either a) a poorer population, b) a population wherein expression of wealth through ceramics or their contents was not a cultural priority, or c) a population without the impetus, either external or internal, for public differentiation of status. Within the MAO sequence, it seems that MAO III suggests the wealthiest period of interment, exhibiting a higher proportion of graves with five vessels and more, as opposed to a predominance of graves with less than five vessels in MAO I-II. The highest number of total ceramic vessels, however, occurs in MAO IV, and the overall pattern for this phase suggests greater cohesion than in the preceding phase (III), where we see a more pronounced division between the richer and poorer graves. MAO IV is the phase during which the most well-provided-for graves are in evidence, those termed the 'elite' graves by the excavators (Kroeper 1992).

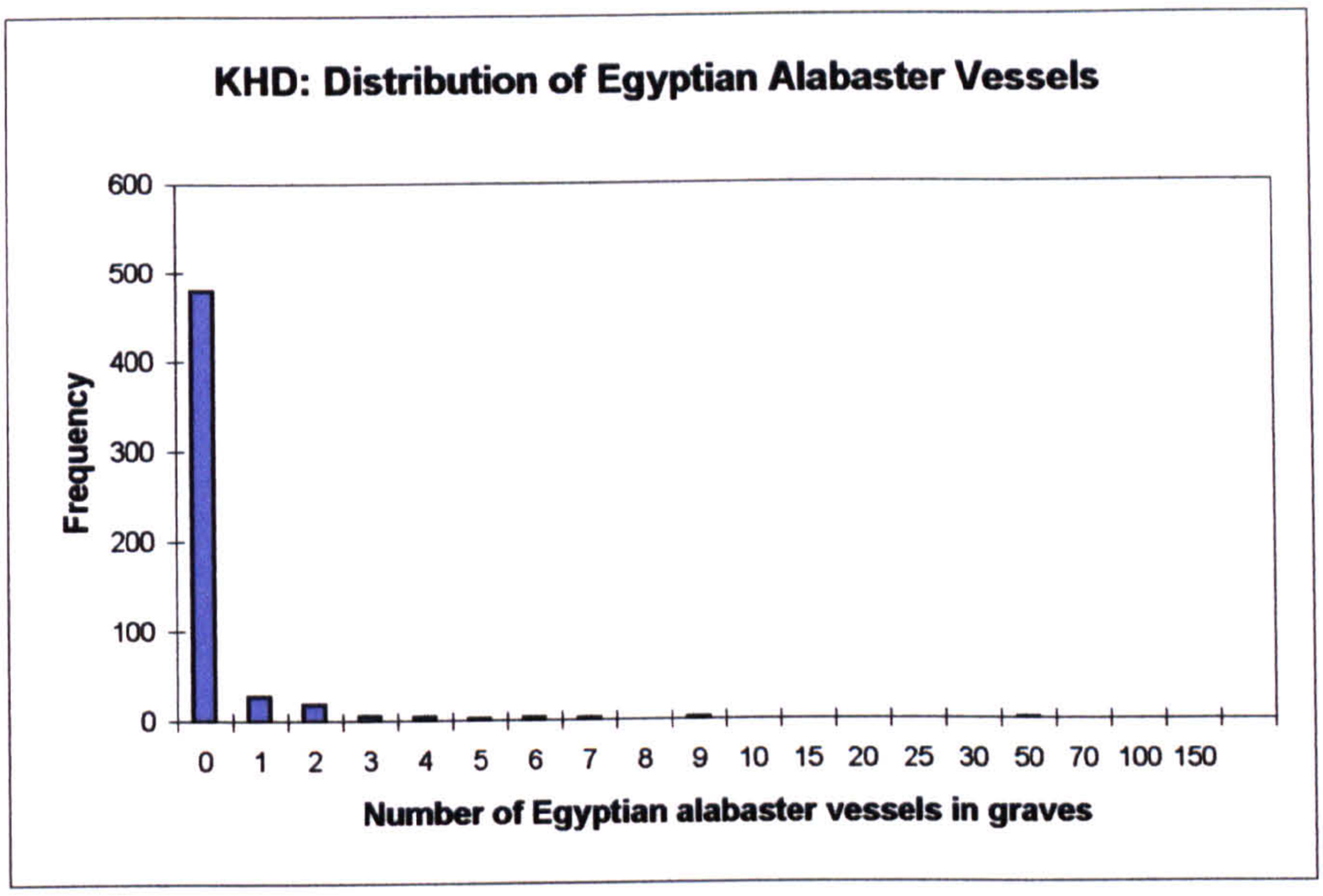
The greatest similarity between sites/phases appears to be between MAO IV and KN. The KHD data have similarities both to MAO I-II in terms of the pattern of distribution, with most graves more poorly provided for, yet to MAO IV in terms of the highest numbers of total goods. It is interesting to note, when considering total ceramic vessels in

terms of wealth, that at KHD the very largest graves with the highest amounts of pottery (970 and 913, both contemporary to MAO IV) are not in fact associated with the very final phase of the cemetery's use. It is important to note that the ceramic vessels within the largest graves, in the south of the cemetery, include wine jars, beer jars and bread moulds (cf. Hendrickx *et al* 2002, 298). Chronologically later than these graves is grave 1041, which is located in the north of the KHD cemetery, an area generally associated with the earliest graves; this grave has, however, been dated on the basis of the pottery assemblage to the reign of Aha, making it the youngest grave (Hassan 2000a, 39). The grave has substantially fewer ceramic vessels than 913 and 970, but it may, nonetheless, be representative of an important individual, positioned in the early part of the cemetery to show association with the ancestors, rather than positioned close to the large tombs, which the community, or kin of the deceased, either could not, or did not wish to, equal (Hassan 2000a, 38).

Frequency Distribution of Egyptian Alabaster Vessels

There is much ongoing discussion concerning the nomenclature for this raw material, as discussed in Section 4.3.3. The MAO publications refer to the material as 'calcite' (Kroeper 1985), and 'Kalzit-Alabaster' (Kroeper and Wildung 1994, 2000); Bakr (1993) uses the term 'alabaster' for KN; at TIA van den Brink (1992a, 50) and van Haarlem (1998b, 511) use the term 'calcite'; and at KHD Hassan (2000a, 38) employs the term 'Egyptian alabaster'. I will be implementing the nomen Egyptian alabaster throughout this work for reasons given in Section 4.3.3.

During the earliest MAO phase, the frequency of Egyptian alabaster vessels within graves is quite low, with higher totals of vessels by MAO III, and with the widest and highest distribution by MAO IV. It appears that over time at MAO greater access to this raw material is occurring. KHD and KN both show most similarity to the MAO IV phase, especially through the presence of high numbers of vessels, but in terms of the distribution curves there is also similarity to MAO III since the distribution decreases as the number of vessels increases.



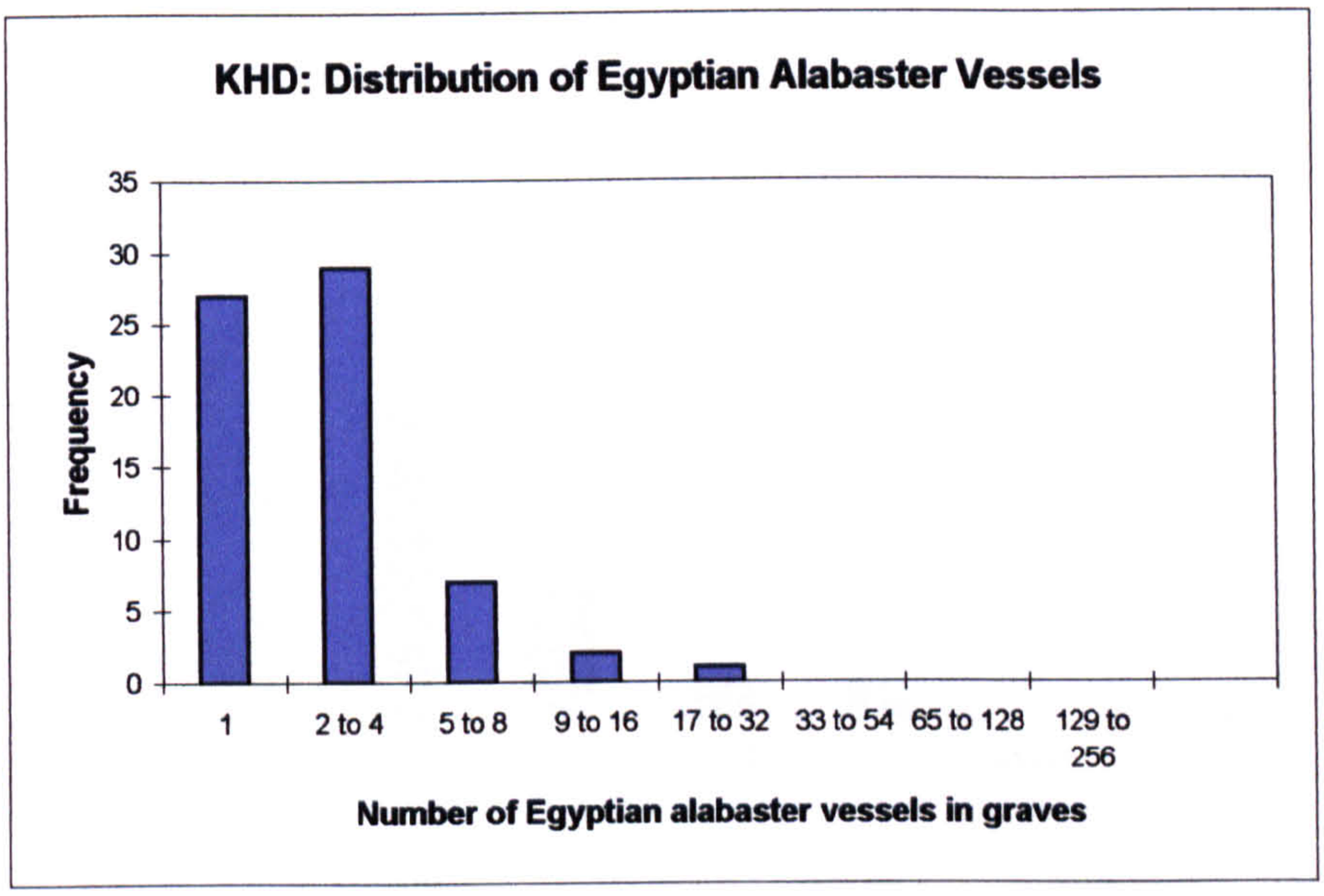
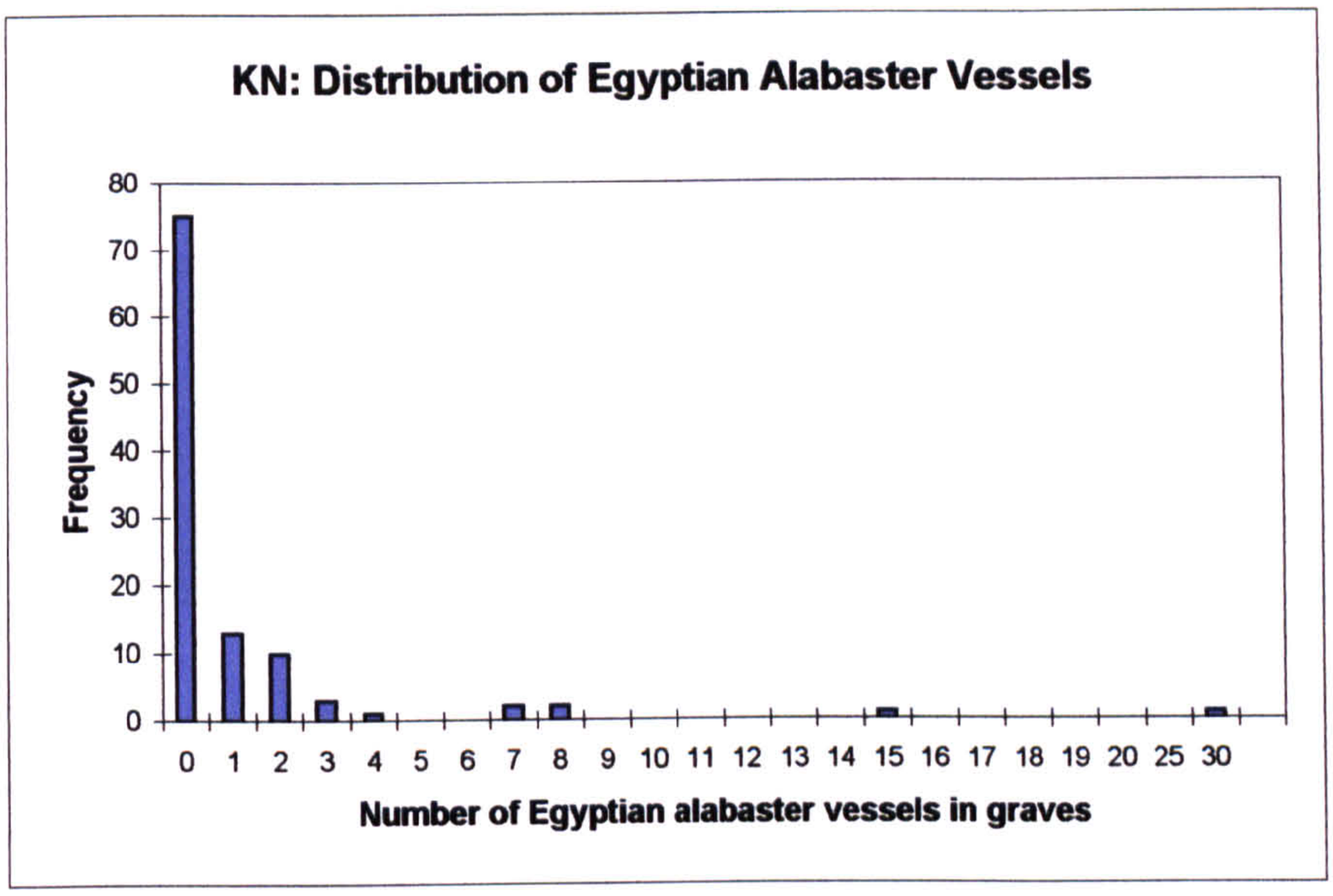


Figure 6.12: KHD Frequency Distribution of Egyptian Alabaster Vessels



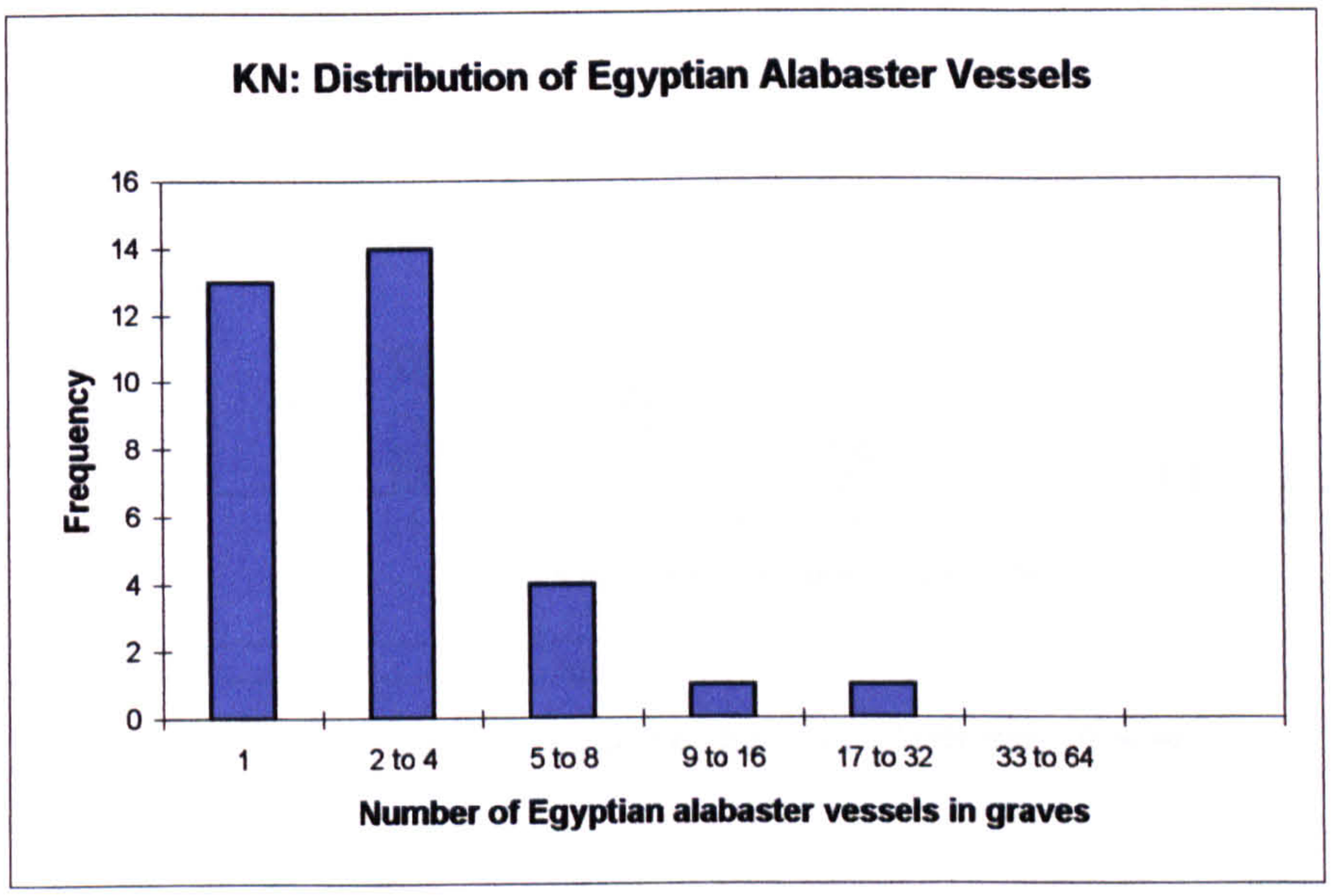
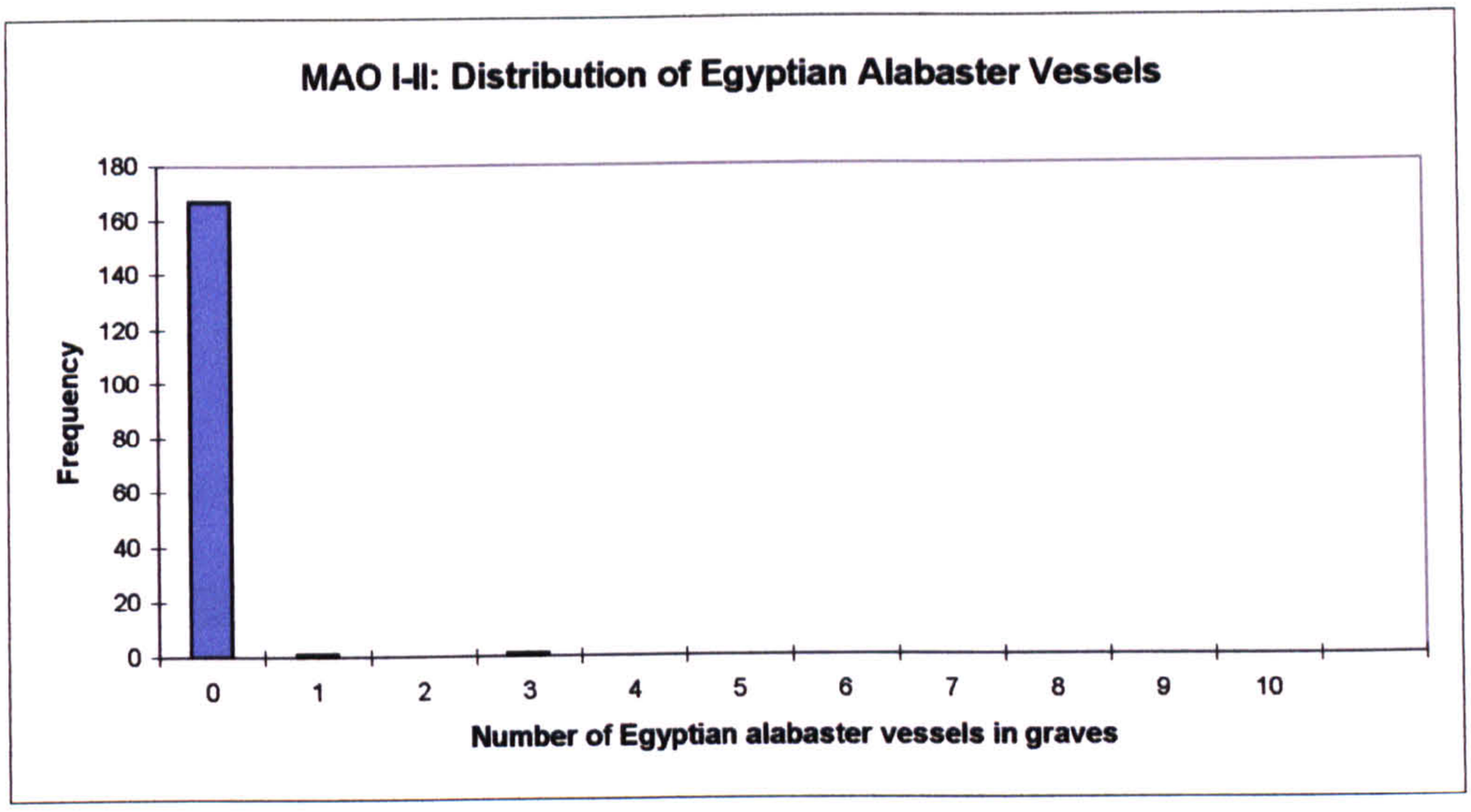
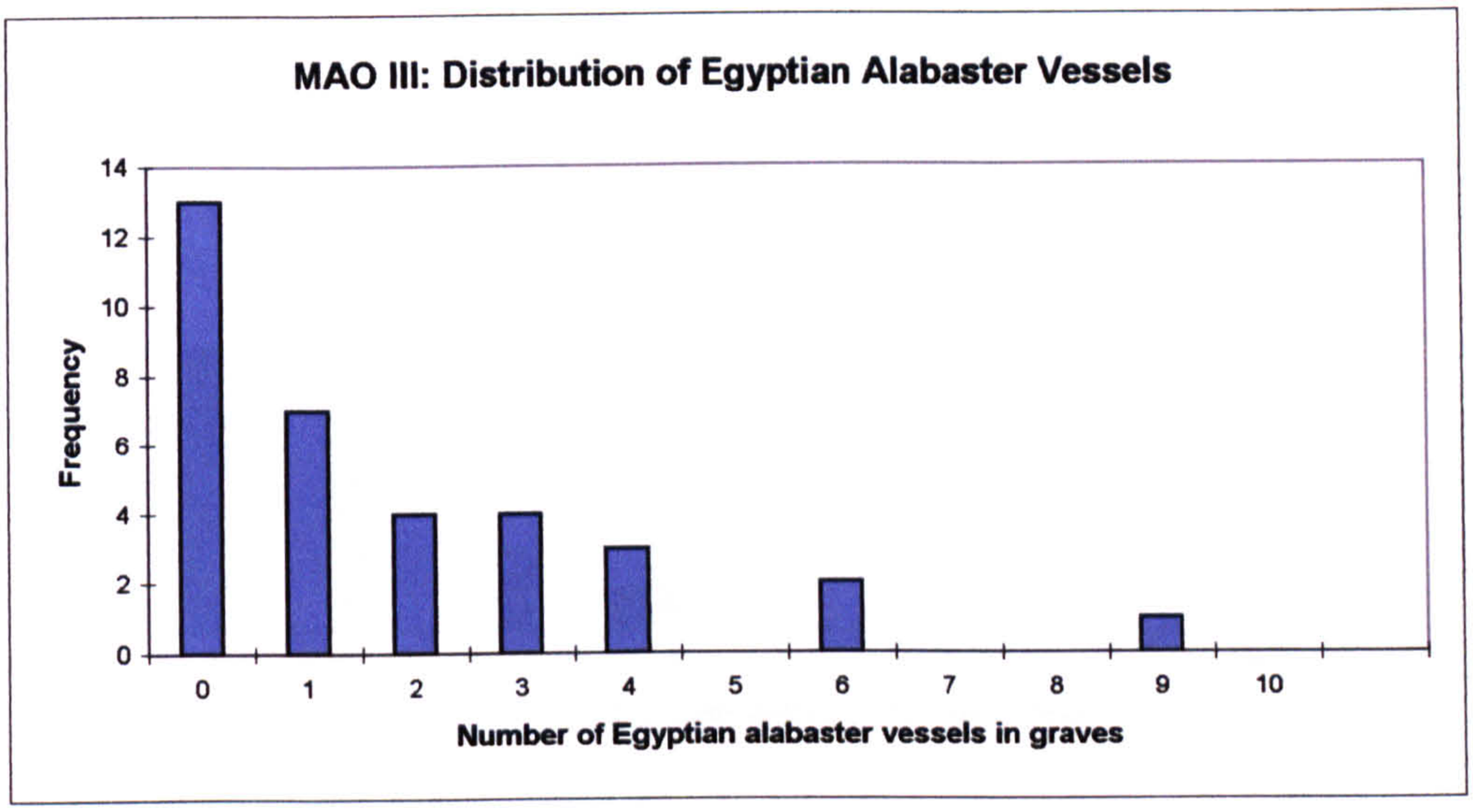


Figure 6.13: KN Frequency Distribution of Egyptian Alabaster Vessels





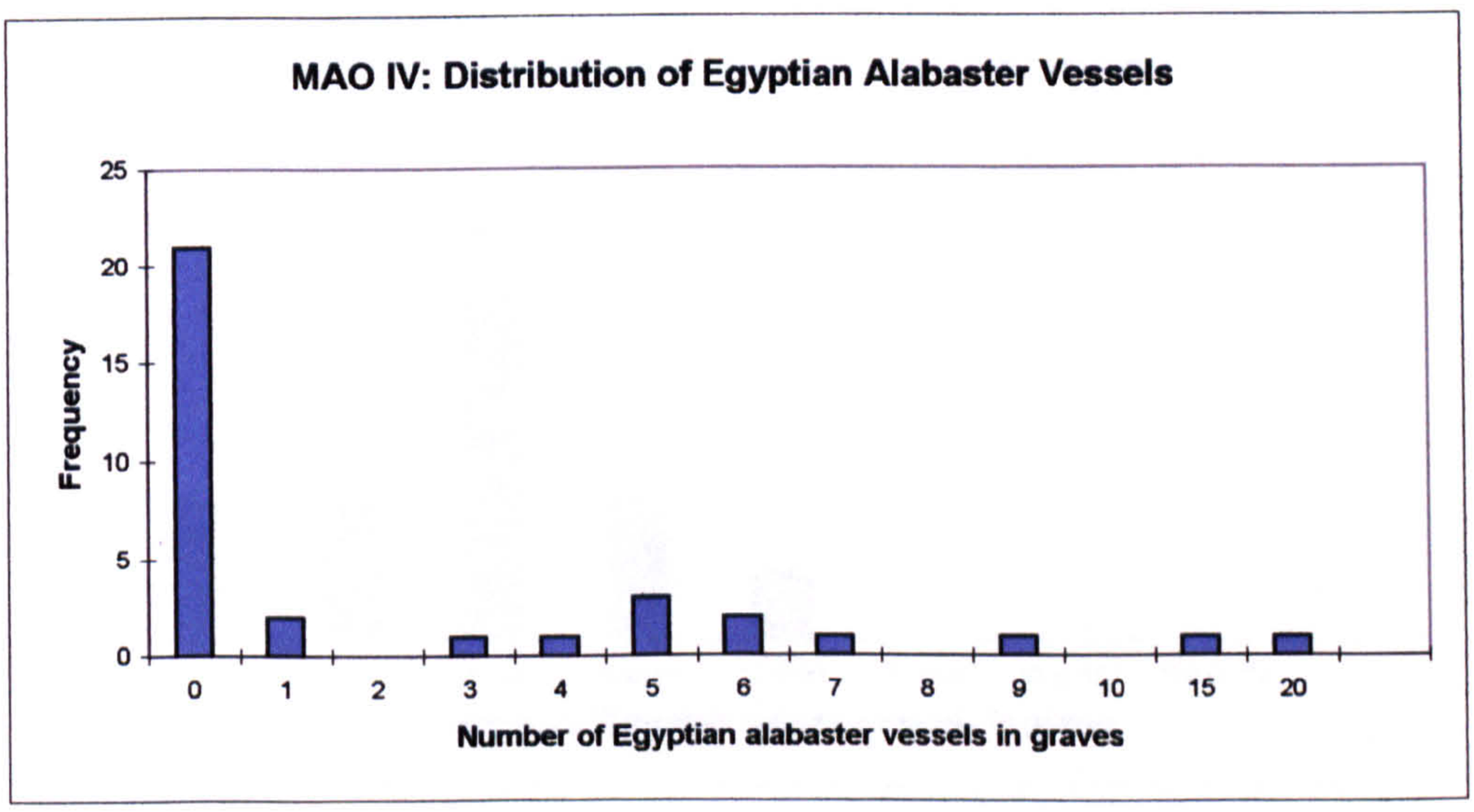
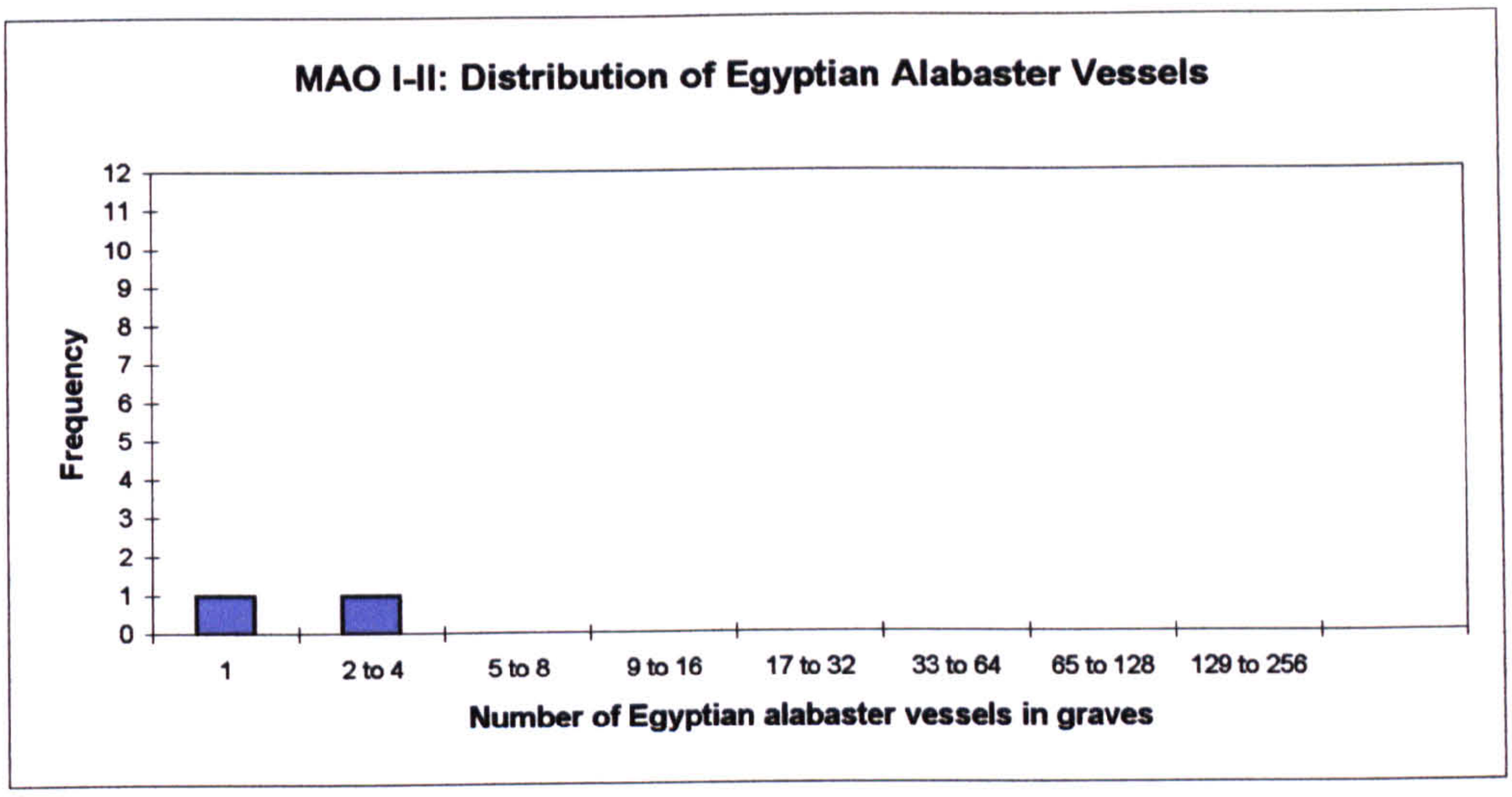
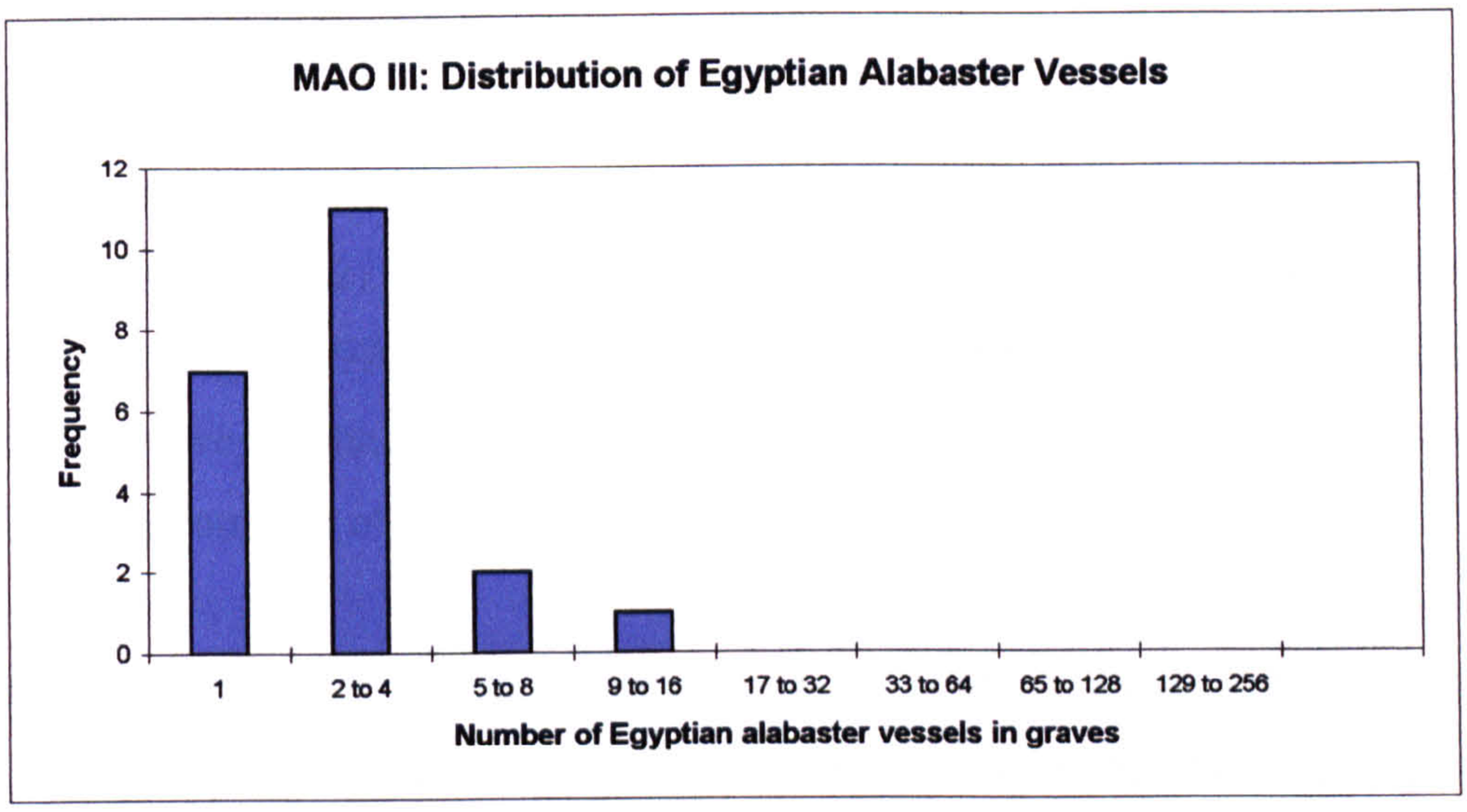


Figure 6.14: MAO Frequency Distribution of Egyptian Alabaster Vessels





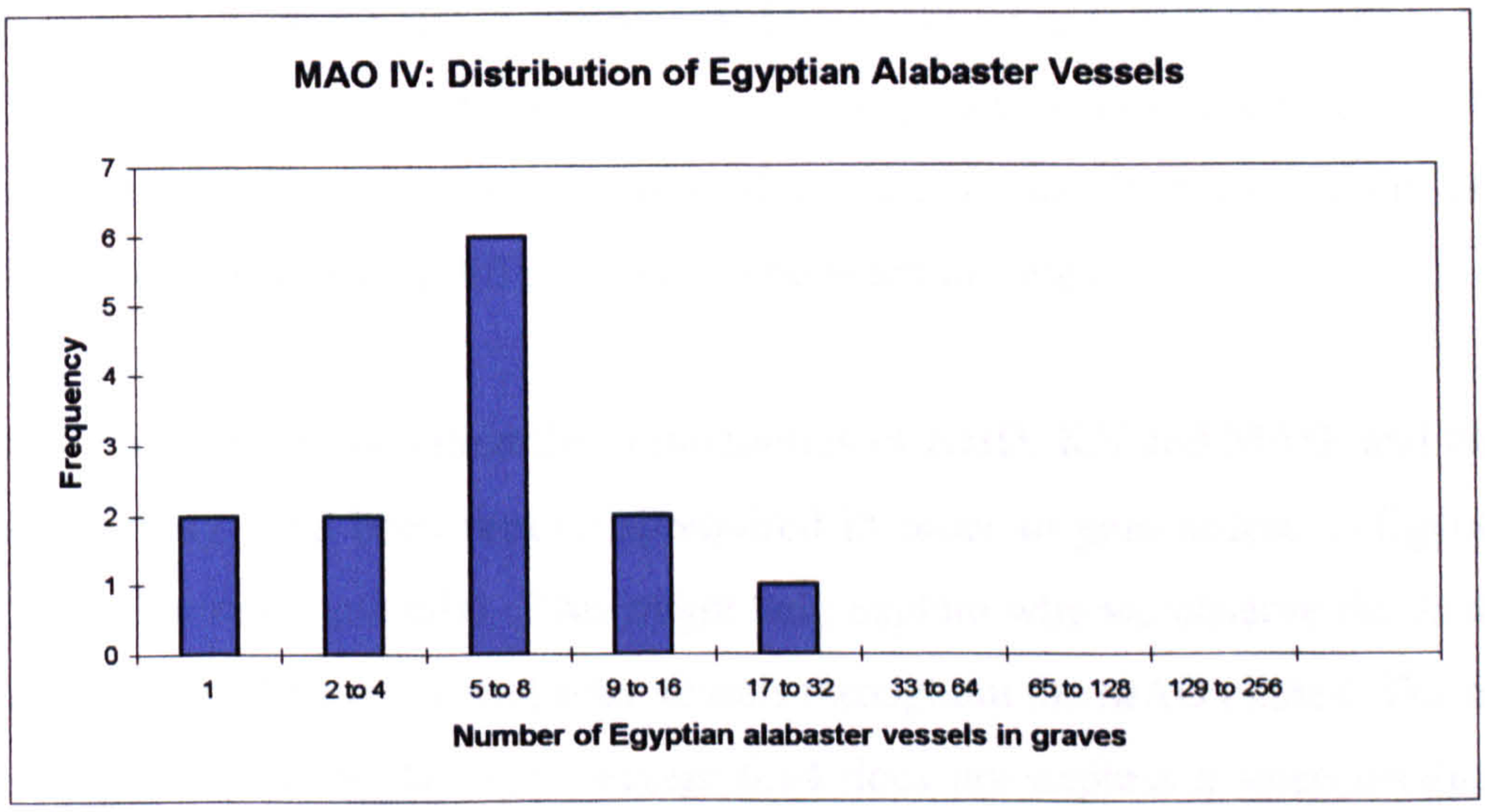


Figure 6.15: MAO Frequency Distribution of Egyptian Alabaster Vessels (log charts)

Egyptian alabaster is believed to have been highly valued for its natural translucent appearance and, notably, stone vessels are not painted during this period (Baines 2000, 34; Figures 6.63, 6.65, 6.66). Van Haarlem (1998a, 18) notes of the vessels found in grave B200/170 1, at TIA, that 'la technique de fabrication de cette vaisselle à une période si ancienne n'a été surpassée que de peu dans les périodes postérieures'. It should prove interesting to observe the frequency distributions of vessels of other types of stone, and consider both attitudes and access to the various stone types. This will be discussed in the section on 'stone vessels' below. Egyptian alabaster was one of the softer stones, and at an earlier date, Naqada I, the majority of stone vessels were being fashioned out of such softer stones (Midant-Reynes 2000, 179).

The data from KHD suggest that there is not a direct correlation between wealth and the presence of Egyptian alabaster vessels, since while the large tomb 913 has the highest amount of these vessels (32), the other large tomb, 970, has only seven; although it must be remembered that grave 970 is the one grave at KHD where a robbers' trench has been found. At TIA, however, the number of Egyptian alabaster vessels does correspond more closely with a high number of total goods.

None of the sites really show a great advantage over the others in terms of distance to the source of the raw material, although if the Wadi Tumilat was an important trade route in early times as in later, then KHD might have held a slight advantage is terms of access. However, it must be remembered that given the much greater overall distances to other stones (for example siltstone), and the input of resources and effort to acquire them, access to these may show a very different pattern between the sites.

Contacts between individuals within the communities of KHD, KN and MAO, and those in other centres may have been beneficial/required in order to gain access to Egyptian alabaster (and other raw materials). This might help explain why we observe the distinct changes in frequency of Egyptian alabaster vessels throughout the MAO phases. For both MAO III and IV, moreover the latter, Figure 6.14 does not express a steep decline in grave numbers commensurate with the rise in the total of Egyptian alabaster vessels. This might reflect the privileged access to resources held by some, and the change in the

distribution between MAO III and IV may also suggest a greater number of divisions within the society by the latest phase.

Frequency Distribution of Gold

From the population sample being analysed here, artefacts made entirely of gold are only present at KHD. They occur in one grave, 73, a grave with four types of artefact, where two items of gold are noted, one being a 'miniature' vessel of gold (El-Hangary 1992, 215). The only other examples of gold are in the form of beads with gold foil and gold leaf, which will be discussed in the analysis on beads below. It is merely possible to observe, therefore, that while gold does occur at a combination of sites that cover the time range being considered here, it is in extremely limited quantities, and reserved primarily for items of adornment.

Gold is possibly coming from approximately 630km south at this time, and the small quantities present suggest that it has arrived in the Delta as down-the-line trade, or gifts. It is even feasible that these items might represent heirlooms. What is apparent is that although gold is extremely rare in occurrence, when it does occur, it does not appear solely attached to the wealthiest burials, or graves of a particular type. Thus its status in the Predynastic seems to differ from its Dynastic status as described in texts. One example cited by Baines (2000, 37; Baines and Málek 1980, 36) from the temple of Seti I (1306-1290BC) at Kanais, explains how gold is not considered to be 'the affair of normal mortals'.

The presence of gold provides evidence for ongoing trade between Lower and Upper Egypt, in both directions, but its paucity is subject to discussion. It is important to remember the problem of looting, discussed in Section 4.4, which may account for this scarcity. It is interesting that KHD grave 73 contains gold objects, especially since the grave does not contain the highest number of artefact types (ceramics, Egyptian alabaster and a copper 'column', possibly an adze) and is relatively small (1.2m x 0.70m). The following discussion on copper objects raises the possibility of copper adzes appearing in a ritual context, and while it is feasible that the assemblage in grave 73 be reflective of

this, it might be more likely, with the occurrence of two different types of metals, that there is a more function-related explanation.

	KHD		KN		TIA		MAO I-II		MAO III		MAO IV	
Object	***Grave***	***No. Type***	***Grave***	***No. Type***	***Grave***	***No. Type***	***Grave***	***No. Type***	***Grave***	***No. Type***	***Grave***	***No. Type***
Copper Piece	123(1) 142(1) 176(1) 913(4)	3 5 1 9	127(3)	4	B200/ 160 1(3)	7			137(2) 434(1) 44(1) 550(1) 1455(2) 1666 (4) 2200 (1)	6 7 6 6 6 5 6	1930(1) 1450 (1) 2000 (1) 1590 (1) 2650 (1) 2897 (4) 1150 (1)	6 5 3 6 4 2 8
Copper Chisel/ Adze	73 (1) 142(1) 298(2) 300(2) 371(1) 523(1) 529(5) 547(1) 714(2) 834(1) 913(1) 1008(1) 1041 (1)	4 5 3 4 6 2 4 5 4 4 9 7 2			B200/ 160 1(3)	7			126(1) 1050 (4)	5 5	1930 (2) 2650 (1)	6 4
Copper Knife	142 (2) 158 (3) 371 (4) 538 (1)	5 5 6 5					761(1)	6	126 (3)	5	1930 (3)	6
Copper Wire	260 (2) 970(2) 1003 (3)	7 2 2										
Copper Mirror	93(1)	2										
Copper Needle	371 (3) 594 (1) 624 (1) 1027(5)	6 5 1 4					224(1) 323(1)	5 4				

Table 6.7: Distribution of all copper objects at KHD, KN, MAO and TIA. The numbers in parentheses indicate the quantity of object type. Grave numbers in red indicate graves that contain more than one type of copper object

Frequency Distribution of Copper Objects

A variety of copper artefacts have been located within the cemeteries under analysis, and these have been classified as: wire, chisel (including adze), knife, piece, needle, or mirror (cf. Petrie 1917; Figures 6.67-6.71). KHD is the only site where all of these artefacts have been found, and all but wire and mirror have been located at MAO. In contrast, only artefacts that can be classified under copper pieces are in evidence from the KN population. Copper pieces include copper vessels and otherwise unidentified artefacts made from copper. Due to the relatively low artefact distribution in comparison to ceramic and Egyptian alabaster vessels, the various types of copper artefacts are being discussed here together. Table 6.7 (above) lists all of the copper objects from KHD, KN,

TIA and MAO, assimilating the count of objects together with the number of artefact types present within the graves.

In terms of those items described as copper pieces, the confirmed objects consist of copper bowls, KHD grave 913 (Hassan *et al* in press), copper pots, KN grave 127 (Bakr 1993, 13), a kettle, jar, and shallow bowl, TIA grave B200/160/1 (van den Brink 1988, 82-83), and in MAO phases III and IV, vessels, bowls and plates in graves 866, 434 and 550 (Kroeper 1996, 74, 76, 78-79; Kroeper and Wildung 2000, 34-41, 169-172).

Copper chisels and adzes are most frequently found at KHD, including an adze considered to be 'purposely broken' and of possible ritual significance (grave 1041) (Hassan 2000a, 39; Figures 6.69-6.70). Another copper object, described as an 'axe' was found in grave 547, and this had also been broken into two fragments; graves 142 and 834 also contained adzes. Savage (2000, 84) mentions 'deliberately broken' fine stone tools amongst those that may be linked to the funerary ritual at the site of Naga-ed-Dêr, and this seems a feasible interpretation of the adze from grave 1041. We will return to this discussion in the section on flint objects, where further evidence of a ritual context might be inferred. There is no apparent evidence for broken adzes at KN, MAO or TIA. Chisels are only found during MAO phases III and IV.

It is clear that chisels (and knives, found during all MAO phases) are only found in association with male burials and the object described as a 'meißel' from grave 126 of the MAO III phase appears, from the publication drawing, to fit the category of an adze (Kroeper 1992, 128-129; Kroeper and Wildung 1994, 149; 2000, 115, 118). KHD is the only site where we find fishhooks (listed under wire), and these are found in a multiple burial of an eight year-old child and an adult female (Figure 6.71). They are associated with the child. In another of the multiple burials, copper needles have been found in association with an adult female (1027b) buried together with an adult male. These five copper needles were originally bound together and are thought to have possibly been tattooing needles (Hassan 2000a, 38; Hassan *et al* in press; Tassie in prep.; Figure 6.68). A ceramic vessel, beads, and four flint blades (Figure 6.72) were also associated with this burial, and the combination of the needles and blades may be related to the functional role

of this woman. Copper needles at MAO appear only during the earliest phase, I-II (one each with a female and a male burial), and as such do not overlap chronologically with the KHD occurrences (Kroeper and Wildung 2000, 60-62, 66-67).

The majority of the copper pieces from MAO III are associated with female burials (the remainder are of undetermined sex) and all of these graves also contain siltstone cosmetic palettes (female-associated items); this trend is not consistent into MAO IV, however, where we find a number of male burials associated with copper pieces, including bowls (Kroeper 1992, 128-131, 136-137; Kroeper 1996, 74, 76, 78-79; Kroeper and Wildung 2000, 34-41, 169-172). There are only two female graves at MAO (published) that do not have palettes in association with copper objects, and these are 323 in MAO I-II and 1450 in MAO IV.

The close association of copper knives and chisels with male burials at MAO may lend credence to the inference of non-sexed graves with these items as being male. A suitable instance for this application at KHD is grave 913, which has both a copper chisel and a flint knife (which is also a male-associated artefact as discussed in the section on flint distribution below).

MAO I-II has a very low frequency of copper objects that implies low accessibility/ availability of this material, and/or the expertise to work it. In both MAO III and IV there is a great increase in the number of copper objects present in the burials. Notably the majority of graves with copper at MAO are associated with a high number of artefact types, although there is wider accessibility to copper pieces in MAO IV. When we bring KHD into the equation we see that copper occurs throughout the artefact type range with the greatest accessibility for copper pieces, wire and chisels, whereas both knives and needles are only present in graves with more than four types of artefact. At KN there is only one grave containing copper, and this is associated with four artefact types.

The evidence from KHD and MAO IV supports the notion that copper becomes more widely available by the Early Dynastic period. This does not, however, appear to be echoed at KN where copper is clearly rare and not occurring within poorer graves.

Wilkinson (1994, 83) notes that copper, gold, silver and lead were being used in Egypt by the start of the Predynastic period, and with regard to metals in general he comments that their use was 'primarily utilitarian', rather than having 'any special significance'. This would correlate with their becoming widespread by MAO IV, with metals probably gradually becoming more accessible rather than being a statement of status or privileged access. Items such as chisels, knives and needles might be more closely related to the profession of the individual, which might help explain why copper is found in a relatively low number of graves and not necessarily accompanied by a great diversity of artefact types. It is interesting to note, however, that in the Wadi Digla cemetery (see Section 2.3), Maadi, there were no copper objects within the poor graves, even though Maadi is considered to have been a very important site in terms of copper working (Hoffman 1980a, 207; Caneva *et al* 1987, 107; Tutundžić 1989, 257; Midant-Reynes 2000, 204, 213-214, 216).

The matter of location in proximity to the natural resource may also be of key relevance here. The main copper producing regions 'accessible to the ancient Egyptians' were the Eastern Desert and the Sinai, including the Serabit el-Khadim region in southwestern Sinai and Timna in Wadi Arabah, now within Israel (Ogden 2000, 149). Lucas (Lucas and Harris 1962, 209) notes the evidence of a Predynastic axe and Terminal Predynastic copper bands, as confirmation of the use of copper from the Sinai. Caneva *et al* (1987, 110) refer to the presence of Sinai copper at Maadi, and Rothenberg and El Gayar (1995, 147) have also remarked upon the evidence of ceramics and flint for Predynastic activity in the south Sinai, west of Bir Nasib. KHD is notably positioned close to the southern edge of the Wadi Tumilat, on an important ancient trade route both to the Sinai and to the Red Sea. This may heighten the possibility that KHD a) played a greater role in trade networks with the southwest Sinai than MAO and KN, and that b) copper objects were going firstly to KHD before being dispersed, in decreasing numbers, to other sites within the region and beyond. Wilkinson (1996, 93) further emphasises the issue of trade routes with regard to the importance of sites being located within this region, noting that: 'The added attraction of access to trade routes – at a time when contacts between Egypt and the Near East were intensifying – might explain the greater concentration of Late Predynastic and Early Dynastic sites in the eastern Delta revealed by recent excavations'.

Furthermore, during the Naqada II phase in Upper Egypt, an increase in the usage of metals is detectable, these being 'principally copper' (Spencer 1993, 45), and this may indicate that Upper Egyptian groups were already trying to tap into the trade routes hitherto primarily enjoyed by Delta communities.

Frequency Distribution of Stone Vessels

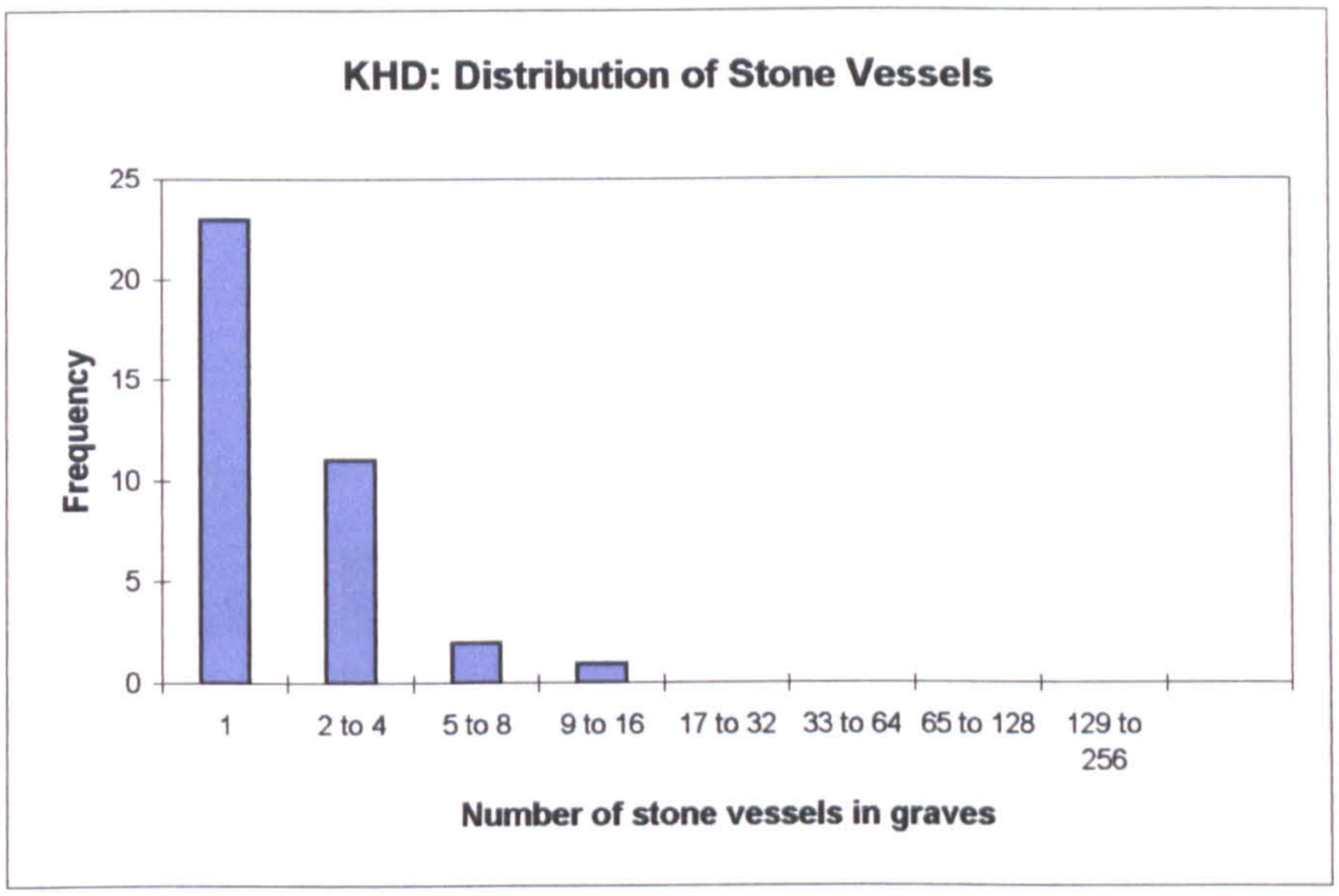
Stone vessels, not including Egyptian alabaster, are located in graves at all of the sites being considered. Egyptian alabaster is considered separately as a) it greatly outnumbers other stone vessels at these sites, and b) it comes from a source notably closer than the other stones from which vessels were manufactured (Aston *et al* 2000, 8, Fig. 2.1).

If sample population sizes are taken into account, the numbers of graves containing stone vessels are roughly comparable for KHD, KN and MAO. A wide variety of material types are recorded at KHD, KN, MAO and TIA, including: limestone, siltstone (schist), greywacke, porphyry, red jasper, diorite, gabbro, breccia, serpentinite, basalt and quartz (Kroeper 1985; 1988, 13-19; 1992, 128-139; 1994; 2000; Kroeper and Wildung 1985; van den Brink 1988, 81-82; el-Hangary 1992, 215-216; Troy 1995; van Haarlem 1998a, 18; Hassan 2000a). The distribution of various stones between the sites is detailed in Table 6.8. Baines (2000, 38) notes the variety of stones being accessed by the Naqada II and III periods, presumably both for 'their colours and other properties'. It will be interesting, therefore, to consider in the discussion below whether this popularity is apparent throughout the use of the cemetery at MAO, or whether there is much change in the amount and types of stones being used both as vessels and other objects during the different phases of cemetery usage.

	KHD	KN	TIA	MAO I-II	MAO III	MAO IV
Amfibolite			1			
Basalt	2		8			
Breccia				1		
Diorite	1		1			
Gabbro						2
Limestone	1			7		5
Porphyry	2					
Quartz			1			
Red Jasper	2					
Sandstone	1			1		
Greywacke	1			1	6	1
Serpentinite				2	1	1
Siltstone	41	47	15	1	1	11
Slate	21					
Steatite	3					

Table 6.8: KHD, KN, TIA and MAO distribution of stone vessels of known materials

Table 6.8 shows that KHD exhibits the most variation in terms of stone types (Figure 6.63). In general, the best-represented materials across the sites are greywacke and siltstone (schist) (see note on terminology in Section 4.3.3), although it may be important that during the MAO I-II and III phases the majority of stone vessels are not made of siltstone.



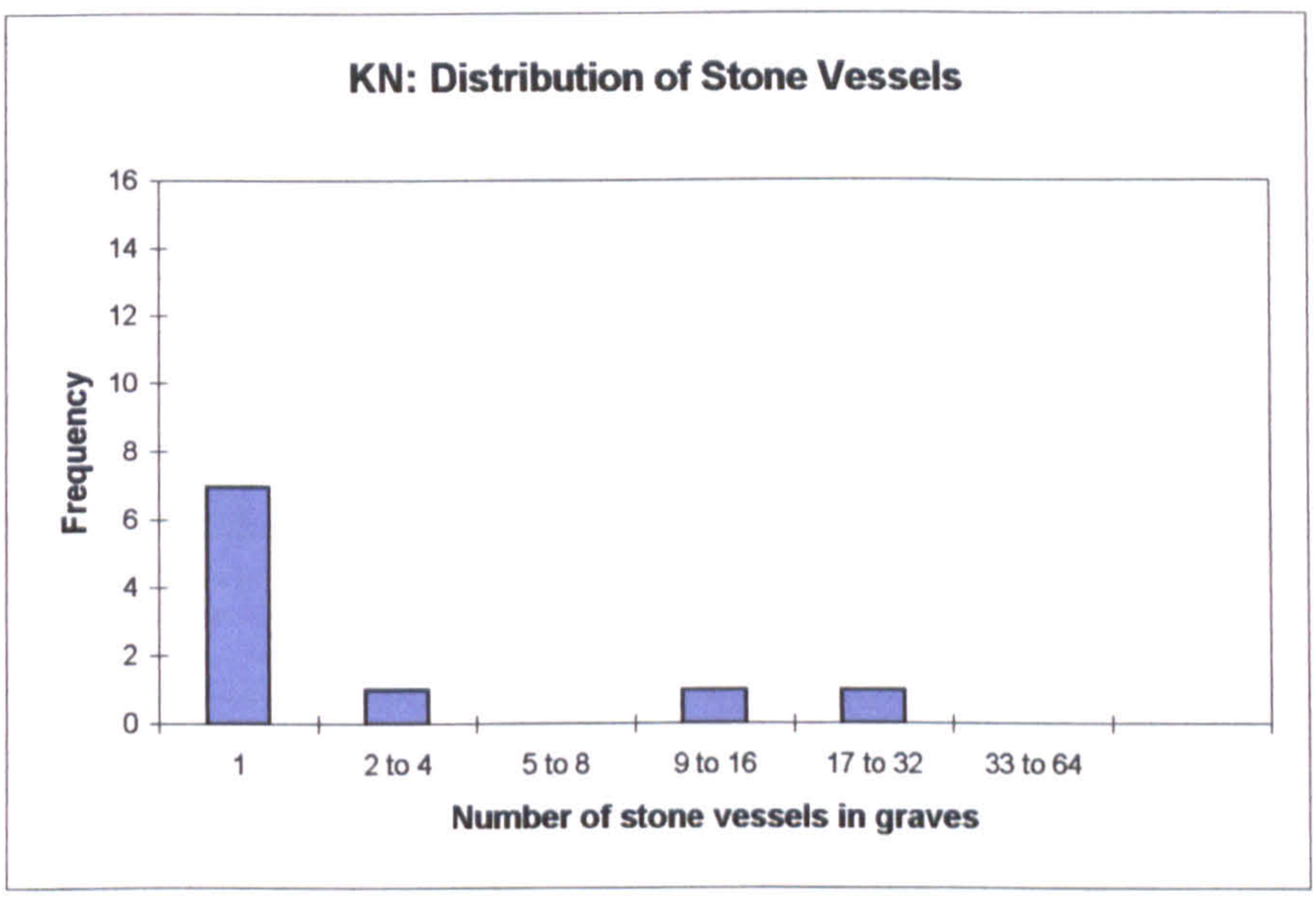
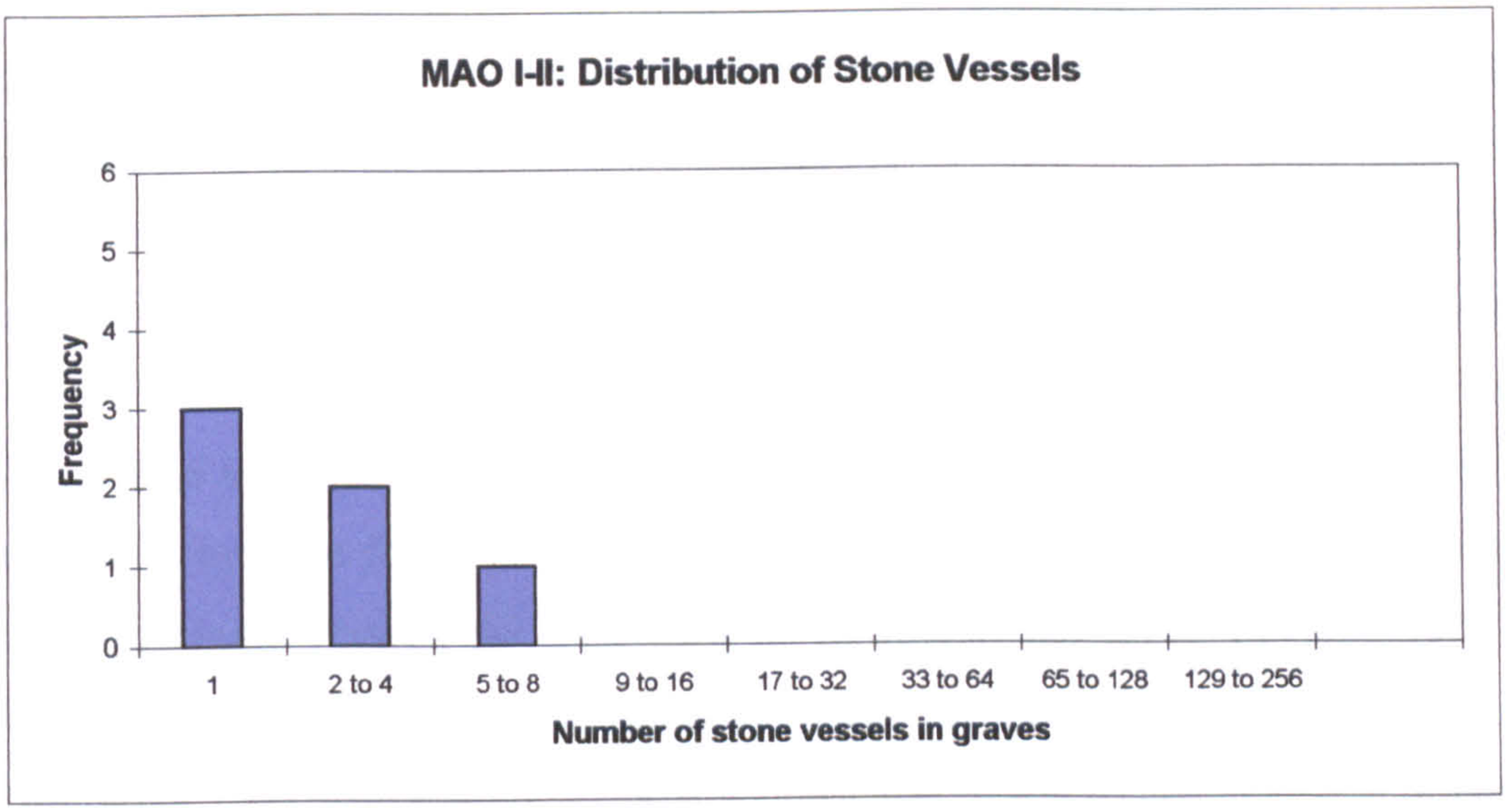
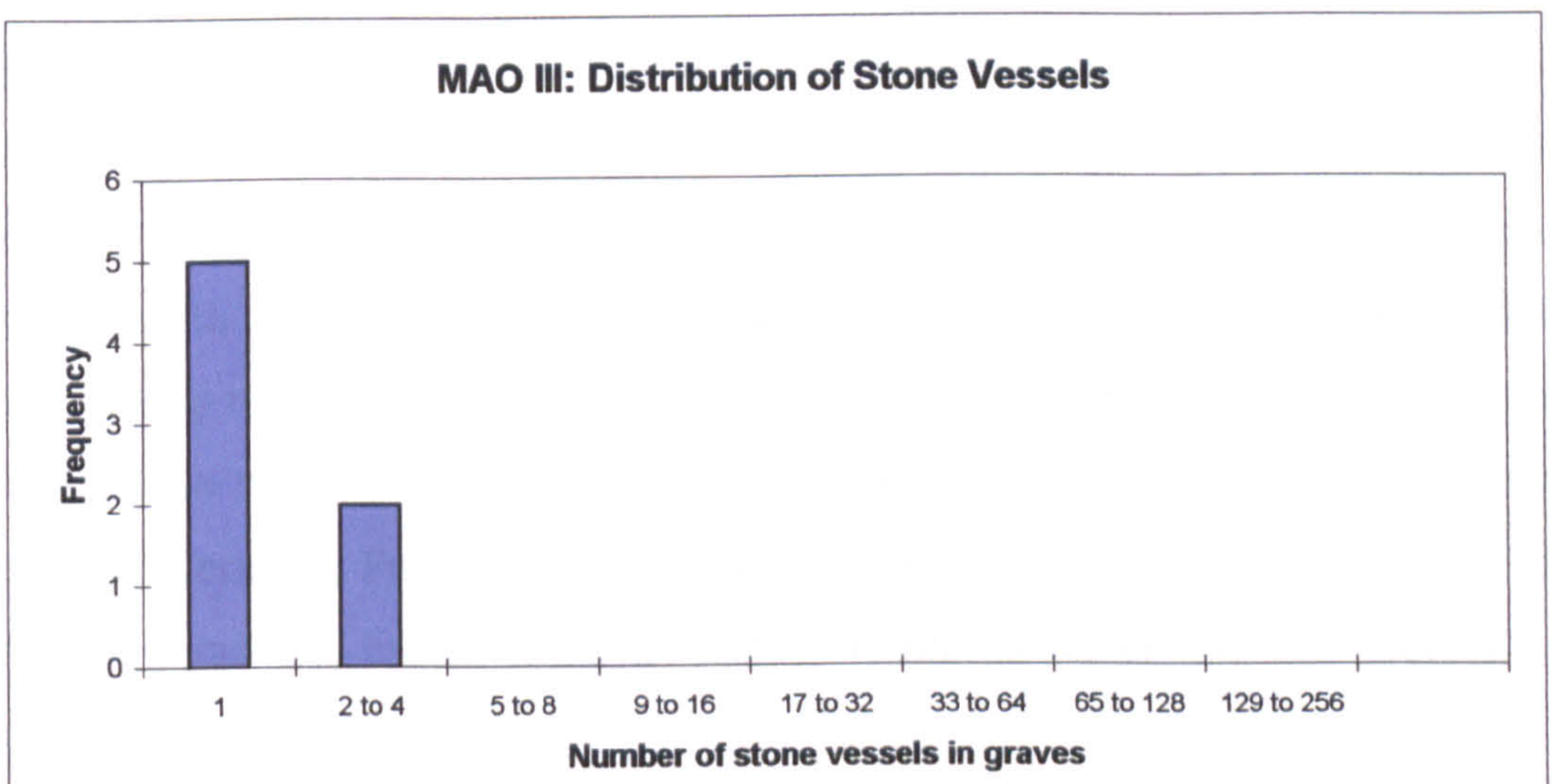


Figure 6.16: KHD and KN Frequency Distribution of Stone Vessels (log charts)





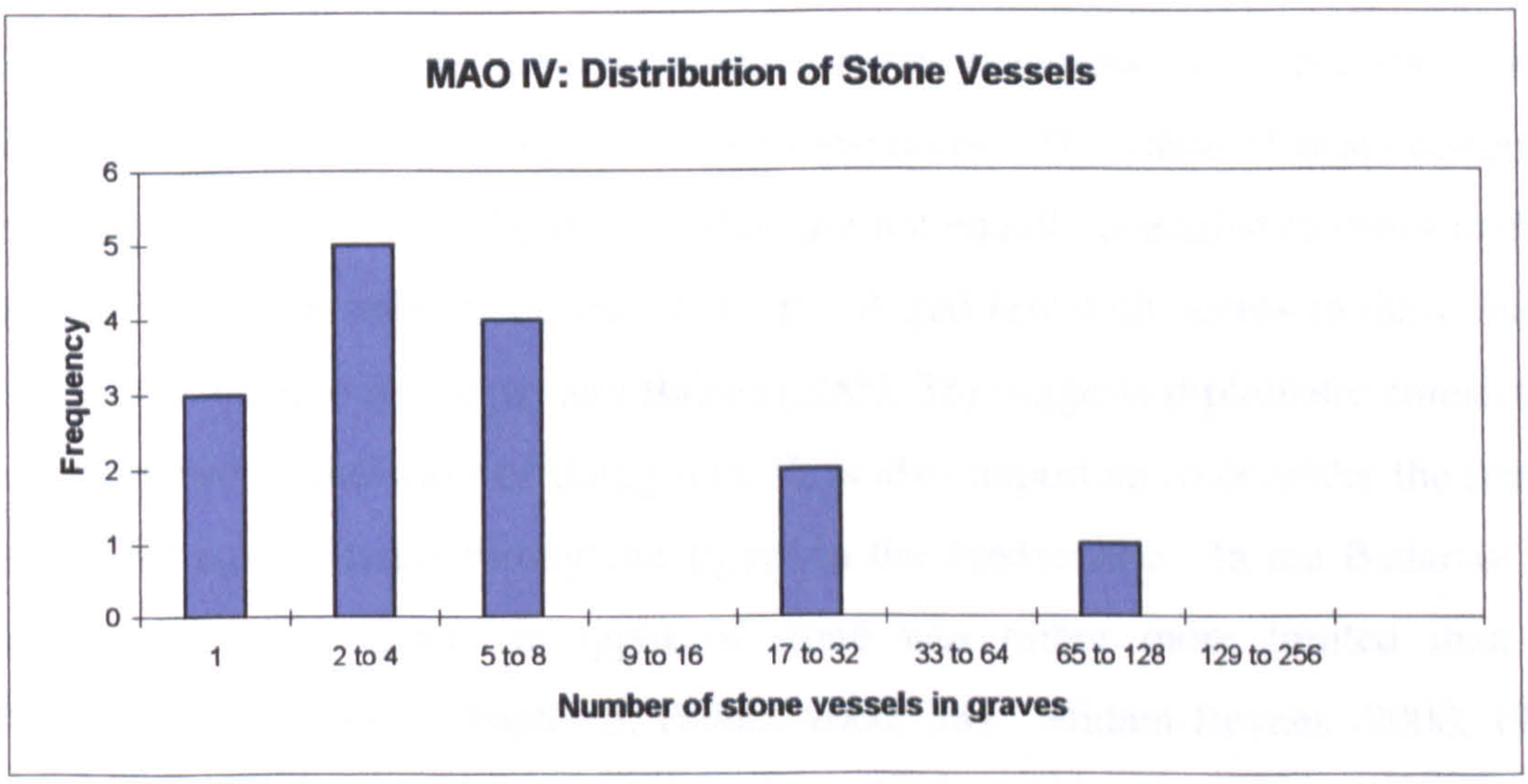


Figure 6.17: MAO Frequency Distribution of Stone Vessels (log charts)

In terms of similarities between the sites, neither KN, TIA nor in MAO IV have occurrences of stone vessels as the sole object within the grave, and in comparison with the other MAO phases, KN and MAO IV have greater numbers of stone vessels within individual graves (see Figures 6.16 and 6.17). KHD is comparable to both MAO I-II and MAO IV. There is, however, a noticeable difference when considering the stone vessels, in comparison to Egyptian alabaster vessels. Whereas KHD might display a small advantage in terms of higher total numbers of Egyptian alabaster vessels within graves, the same is not true for stone vessels. The majority of graves containing stone vessels have only single vessels; the maximum of 15 vessels are found in tomb 913. When compared to the more frequent Egyptian alabaster, this underlies my earlier argument that KHD might have had a slight local advantage for Egyptian alabaster that it could not maintain for more distant resources. It might also be the case that MAO, and indeed KN, had the means by which to acquire distant materials, means that KHD is lacking. It is possible that KN, MAO and TIA have contacts allowing them to either play a greater role in north-south trade, or it may be that traders from the south are taking routes through the Delta, trying to avoid trading through the Delta middlemen on the routes across to the Levant, or to the western Delta. At Buto, in the west central Delta, a number of stone vessels of Terminal Predynastic/Early Dynastic date have been found, and the materials include greywacke, basalt, Egyptian alabaster, limestone, granite and breccia (von der Way 1997, 160).

Activities surrounding the actual acquisition of raw materials may represent a means of showing status through privileged access to resources. The value of stone coming from afar is clear, since we can observe that they are not equally available to every member of the community. In order to be one of the privileged few with access to these materials, relationships need to be forged and Baines (2000, 38) suggests diplomatic connections or warfare as two of the ways of doing this. It is also important to consider the increasing presence of stone vessels throughout Egypt in the Predynastic. In the Badarian period, Naqada IA-B, the variety in types of stone was rather more limited than during subsequent periods (see Chapter 5; Baines 2000, 38). Midant-Reynes (2000, 192-193) notes that the Naqada II period witnessed much progress in stone-working technology, and that the increase in the range of types proved that 'mastery of hard stones' had been

achieved; vessels of softer stone may be regarded as 'ordinary' since they were easier to fashion than the hard stones (Adams and Ciałowicz 1997, 31; cf. Bard 1989, 232-233). Up to and including Dynasty III, stone vessels were important and frequent items within the grave good assemblage. To this end it is interesting to note O'Connor's (2000, 24) comment that at Nag' el-Deir, in Upper Egypt, stone vessels become even more common that ceramic vessels, and only declined in numbers during Dynasty IV.

Table 6.8 indicates as wide a variety of stones available in MAO I-II as IV, although the distribution is different, with the occurrence of stone vessels in MAO IV being spread across graves of varying types, while at MAO I-II there are only six graves containing this type of object, all containing above four types. It is also important to consider the cause for the change in stone types, and the lack of consistency in the relationship between the presence of stone vessels, with wealthy graves and/or graves of a specific sex across time. A further consideration is the 'ideological and religious exploitation' of the material; the symbolic value of the stones (Baines 2000, 38). If there is not direct continuity between MAO I-II and III/IV, then this may contribute to the explanation of the significant differences in the distribution of stone vessels between these phases. It is during the final phase of the cemetery that we can detect the most widespread availability of stone vessels at MAO.

It appears from textual evidence that the quality and type of stones was very important, and Baines (2000, 32) discusses the hieroglyphic names given to stones in terms of metaphor. The word for limestone, for example is 'perfect white stone', it goes beyond the purely descriptive to present us with an insight as to how these materials were viewed (Baines 2000, 32). Adjectives such as 'marvellous' and 'wonderful' are also applied to quartzite (Baines 2000, 32). Serpentinite was also believed to have held special qualities due to the veining within the stone (Wilkinson 1994, 87; Baines 2000, 32). In historical times serpentinite was used for magical stelae and amulets to ward off attacks by snakes and scorpions; it is a stone quite commonly found in the Eastern Desert (Wilkinson 1994, 87). That imitation stone vessels were manufactured in pottery during the Predynastic and Early Dynastic further highlights the desirability of stone vessels, and its role within the grave good assemblage for the journey into the afterlife (Midant-Reynes 2000, 193).

By the final MAO phase, it is possible to see stone vessels becoming increasingly available to females. In the previous phase (III) stone vessels only occurr with female burials of a high number of types, whereas in MAO IV females are provided with a wide variety of stone vessels, in graves with as few as three types (Kroeper and Wildung 2000, 69-72, 91-95). The types of stone associated with females are diverse, including: limestone, siltstone, greywacke and gabbro, and the assemblage of grave 1147 even contains a composite vessel (Kroeper 1985; 1996, 79-80; Kroeper and Wildung 2000, 47-55, 96-99, 109-113). In terms of male graves, all of the male graves of phase IV with between two and six types contain stone vessels; siltstone and limestone are the only confirmed materials used, with others unrecorded/unknown (Kroeper and Wildung 2000, 124-128, 173-174).

It will be key, both later in this section and in the next (Section 6.2.4) to consider how females and males compare in terms of variables including total goods and grave size. These factors together may allow for a closer insight into the possibly changing roles of men and women, with the rise of the importance of centralised organisation (cf. Savage 2000, 78, 83, 91; Hassan and Smith 2002, 45; Section 7.1.4). Savage (2000, 91), through his analysis on the status of women at Cemetery N7000 at Naga-ed-Dêr, considers that women held a large number of roles within society, and he concludes that their status was 'greater than or equal to men'. He also comments that women's status actually changes due to the increasingly centralised state (Savage 2000, 91).

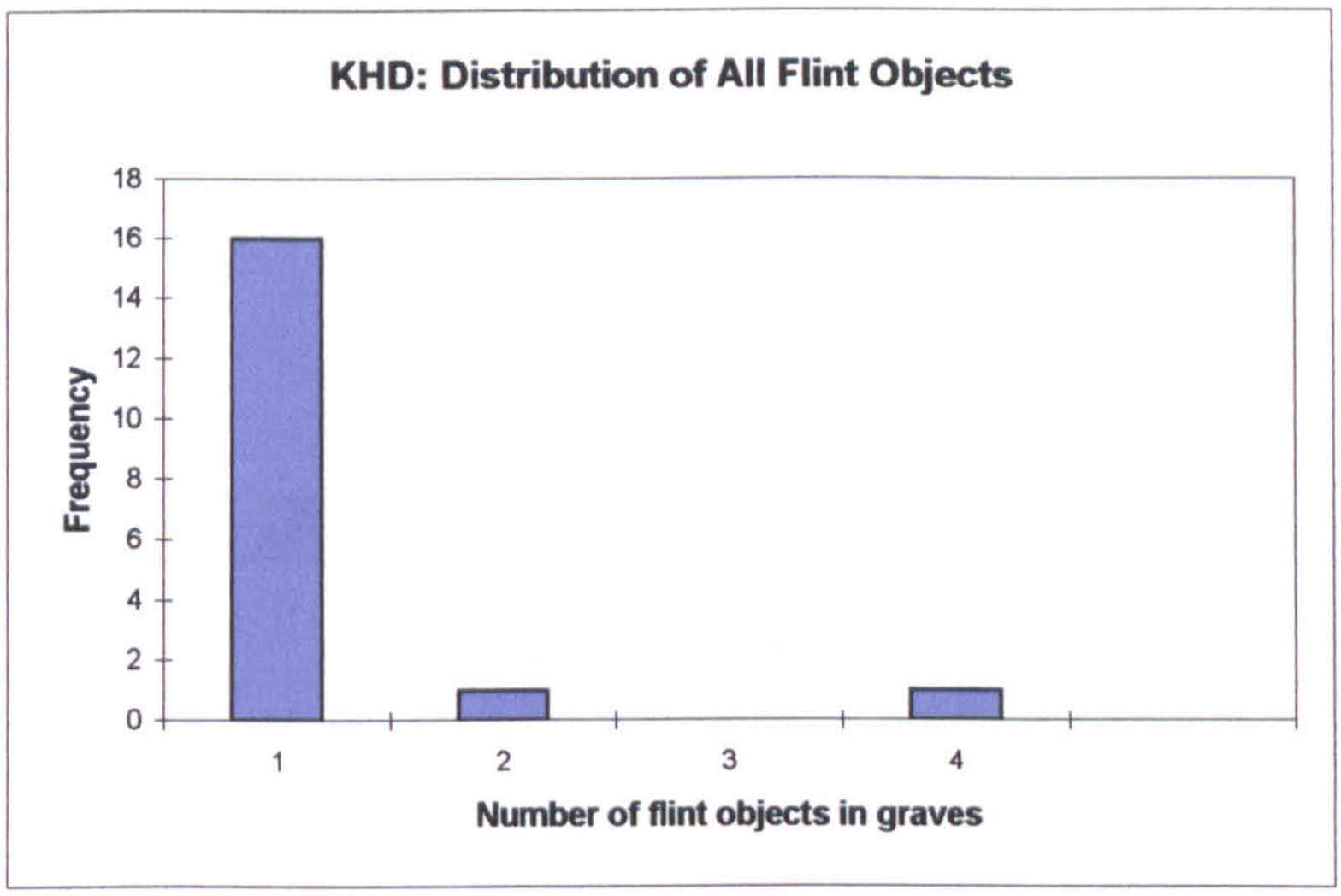
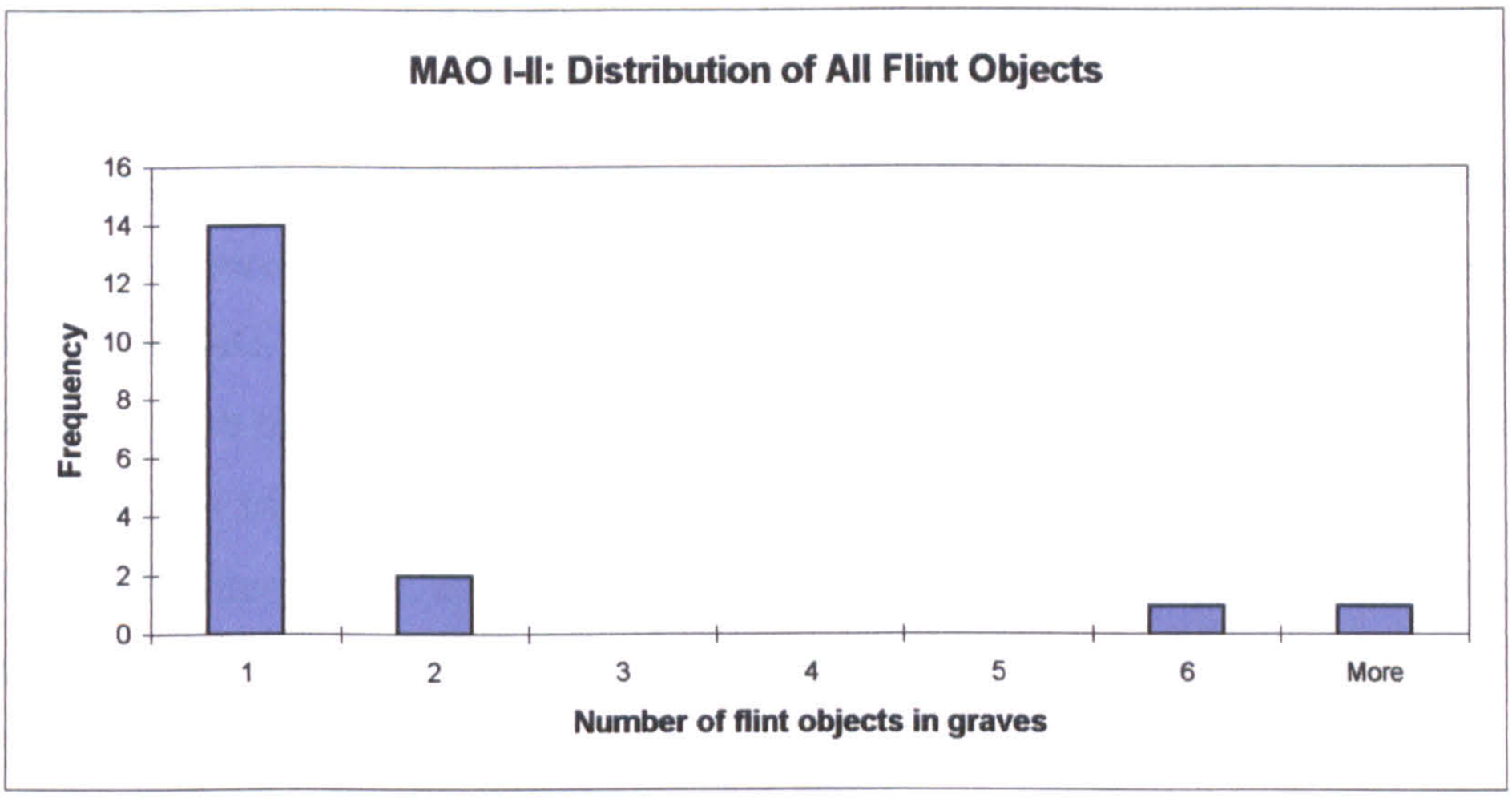
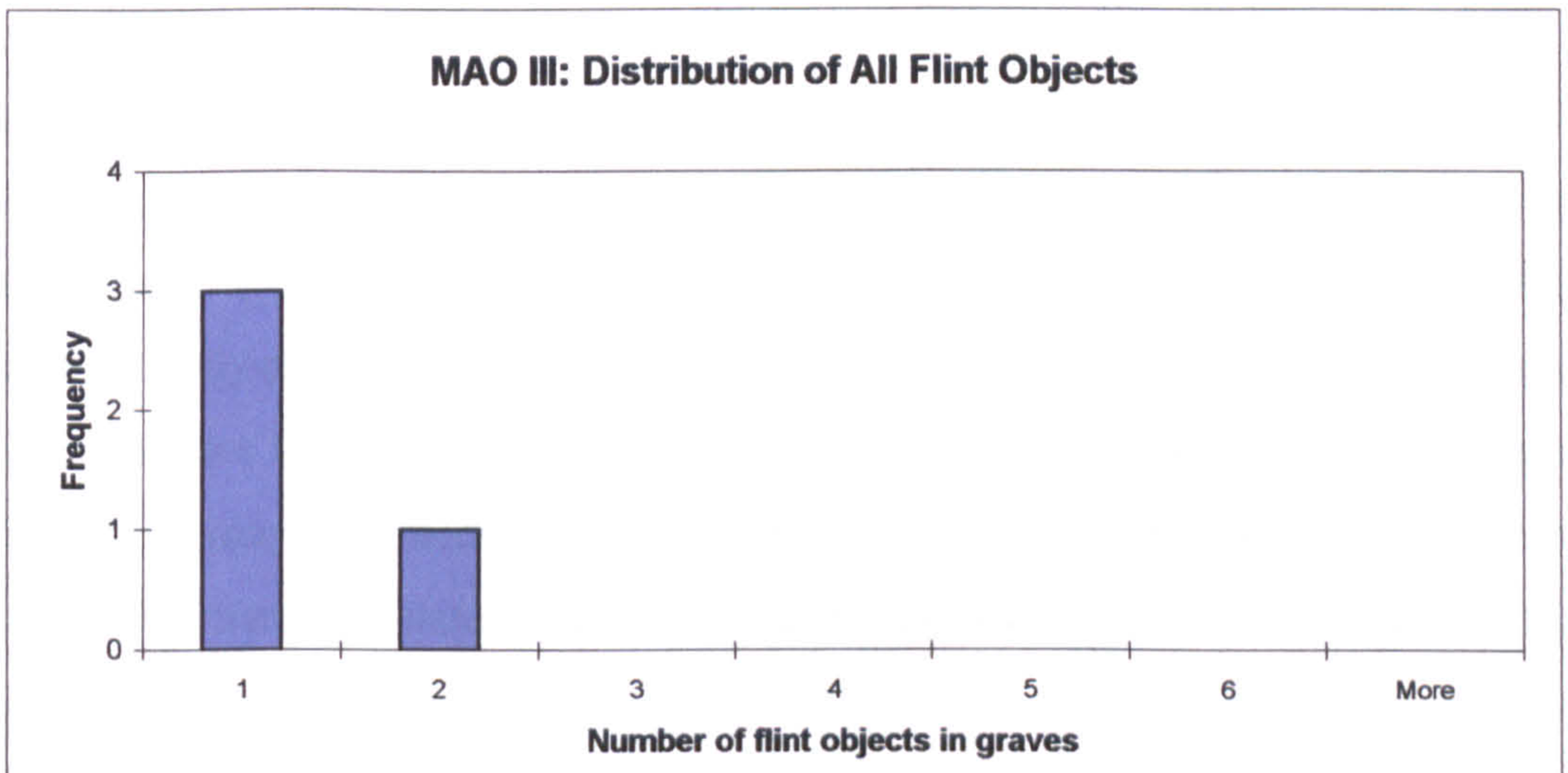


Figure 6.18: KHD Frequency Distribution of Flint Objects





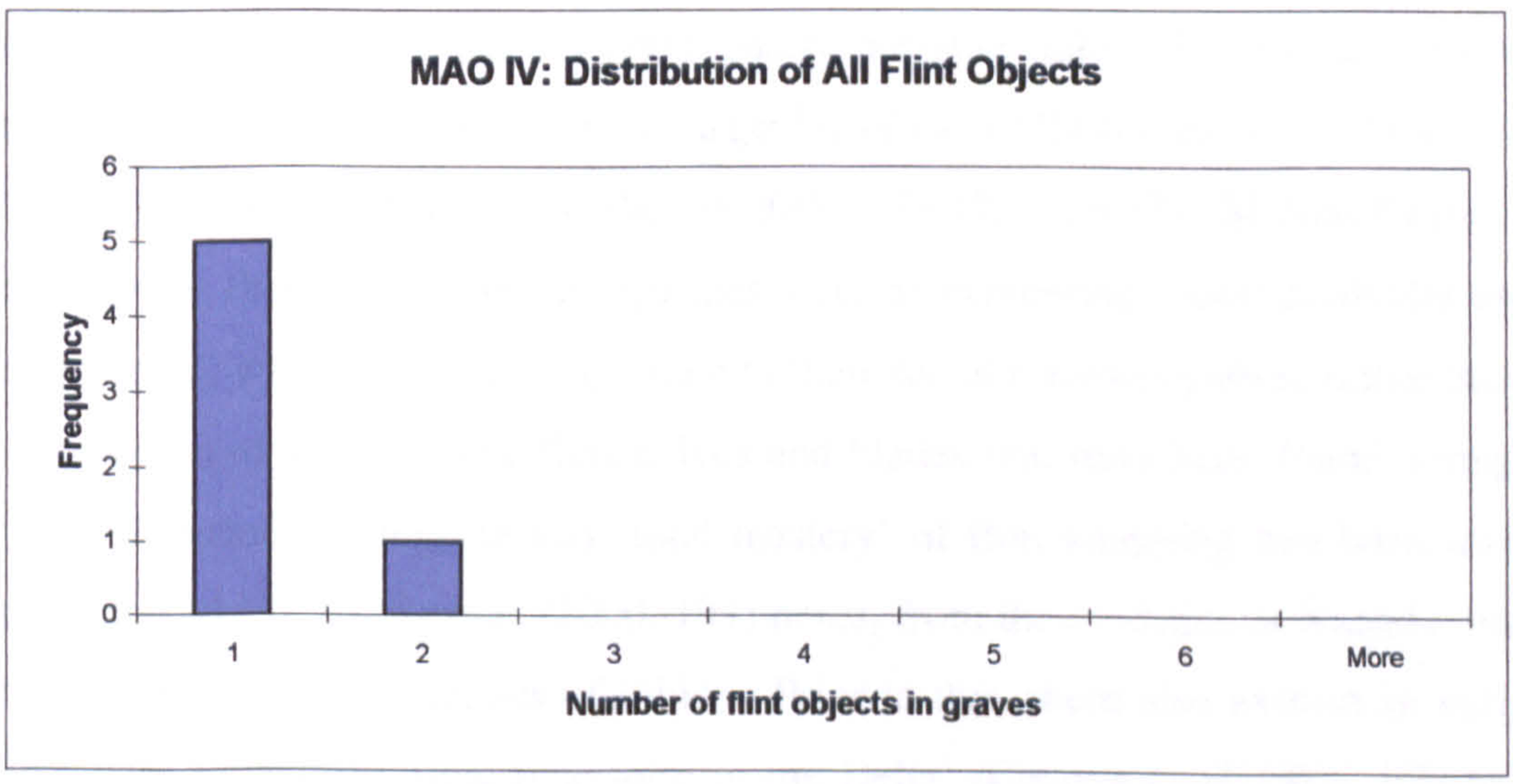


Figure 6.19: MAO Frequency Distribution of Flint Objects

Frequency Distribution of Flint Objects

Flint objects are recorded at KHD and TIA, and are present in all phases of the MAO cemetery. Two types of flint object are consistently found: flint blades and flint knives, the latter already noted for their close association with male burials at MAO (Sections 6.2.1-2). Figures 6.18 and 6.19 illustrate the frequency distribution of flint artefacts at KHD and MAO. At MAO the distribution of flint knives exhibits some differences when compared with the KHD population. In both cemeteries, flint objects are found in graves with a wide variety of other types, between two and six at MAO, and two and nine at KHD. The later phases at MAO show a decline in the occurrence of flint knives that is not echoed in the KHD material. Tests made at KN in 1978 indicate that flint knives were found, although a mortuary context was not confirmed (Bakr 1988, 50).

During MAO I-II the distribution of flint blades is higher than at KHD (although in both cases they are found within graves containing between two and six types), and certainly higher than the distribution of flint knives throughout the MAO cemetery. At TIA, flint blades are only present in one of the graves, B200/160 1, where three double scrapers and six points were found (van den Brink 1988, 83). Van den Brink (1988, 83) suggests that these blades may have been produced specifically for the burial, since they do not appear to have been used. To date, no pressure-flaked flint knives have been found at TIA.

At KHD and MAO neither blades nor knives appear to be solely linked to individuals with large and varied amounts of grave goods; pressure-flaked flint knives, however, are part of the funerary assemblage in the larger burials at KHD and in one of the elite burials at MAO (Kroeper 1992, 131-134; Hassan 2000a, 39; Figure 6.73). Midant-Reynes (2000, 175) suggests that flint knives, as figurines, may be expressing 'some particular aspect of the deceased', which I believe may relate to their social role/occupation, rather than being an expression of wealth. The flint knives and blades that have been found dating to the Naqada II period do indicate that 'total mastery' of flint knapping had been reached at this stage, and Midant-Reynes (2000, 199) notes, from the evidence at Naqada, that there were specific 'funerary' ranges of lithics. Prior to this, there also existed an indigenous '"Buto-Maadi" culture lithic repertoire in the Delta' (Caneva *et al* 1987, 107-110), and

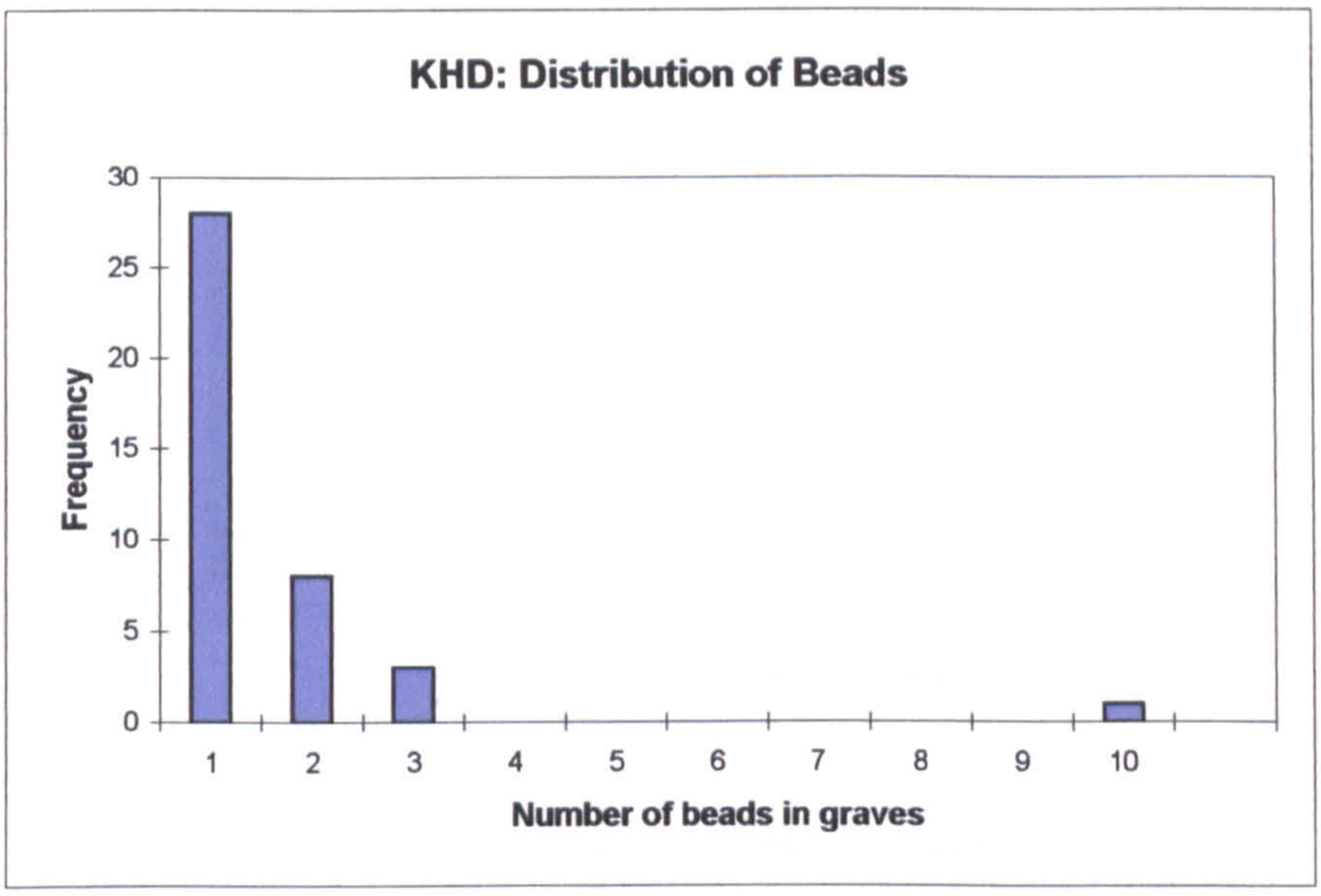
Adams and Ciałowicz (1997, 28) have commented on bifacial and ripple-flaked tools having been 'imported' from Upper Egypt.

Flint was a plentiful resource and despite the early manufacture of metal blades, flint blades were retained for use in religious ceremonies, holding symbolic connotations (cf. Wilkinson 1994, 87). Baines (2000, 30) echoes this, describing the 'powerful symbolic associations' of flint, and Adams and Ciałowicz (1997, 28) comment upon a type of First Dynasty knife that has been 'identified' with ritual slaughter within a temple context. It is possible that the flint knife from grave 970 at KHD was used in a ritual context, since it was found not only in association with five shallow ceramic oval bowls and five ceramic plates, but also with animal bones (Hassan 2000a, 39; Figure 6.64). Savage (2000, 84-85) discusses the Opening of the Mouth Ceremony (which he notes occurred from Dynasty V onwards), which involved the sacrifice of animals with flint knives; he suggests that there were 'Predynastic antecedents'. Also, in MAO IV Kroeper (1988, 17) notes that parts of a large bovine were found in the main chamber of one of the 'elite' tombs, 1590, together with ceramics and a flint knife. While grave B200/160/1 at TIA does not contain a flint knife, it does contain flint tools and 'meat offerings', in addition to a blunt-edged copper adze (or 'plaque') (van den Brink 1988, 78-83). It seems perfectly conceivable, therefore, that we are seeing the remains of an early ritual ceremony within these contexts at KHD, MAO and TIA, with other rituals suggested by the breaking of copper adzes, as referred to in the earlier discussion on copper objects.

Regarding the link between flint and males/females, we have seen above that the association between flint knives and males is persistent at MAO, but is this a measure of the type of artefact, the material, or both? Flint blades occur in burials of confirmed males and females, and at KHD there are both male and female 'associated' grave goods occurring in association with flint knives: graves 529 and 547 contain copper chisels, but a number of other graves contain pendants and bracelets, which are more commonly found with females at MAO. The highest number of flint blades within a single grave (17) is found in association with a female burial at MAO (I-II), aged 17-18, together with pottery, stone vessels, beads and ivory, minerals and shells (Kroeper and Wildung 1994, 116-122).

Hassan and Smith (2002, 47) discuss sex and gender in terms of the data from the Naqada Main Cemetery, B and T Cemeteries, and the cemeteries at Matmar and Mostagedda. Their analysis shows a positive correlation between male burials and flint, which they propose accords with rock art in Nag Kolordana which shows men in hunting scenes (Hassan and Smith 2002, 63). While this may be the case at these sites in the Nile Valley, we only have evidence from the Delta sites under investigation to suggest a relationship between flint *knives* and men. Flint blades, as opposed to the flaked flint knives, do not seem to be predominantly favoured by either sex.

A couple of other factors may clarify why the distribution of flint blades is relatively even at KHD and MAO. Hassan and Smith (2002, 63) note the association of the goddess Neith with archery, as a goddess of warfare, which might remove flint blades from a strictly male domain, if we see flint blades being used in this context; as a further point, although men might be associated with flint blades through hunting, these same blades may be used by females for different functional activities. One of the multiple graves at KHD, 1027b, contains both flint blades and copper needles in a female context, which may indicate a relationship between the deceased and a specific activity, for example, working with animal hides, using needles for puncturing the skin and blades for scraping it (Figure 6.72). Copper needles occur in two graves at MAO (I-II), one male, one female, and the male burial also contains flint blades, possibly relating to the daily activity of that individual. It is feasible, therefore, that some tasks may have been carried out both by men and women, resulting in the relative parity of these grave goods.



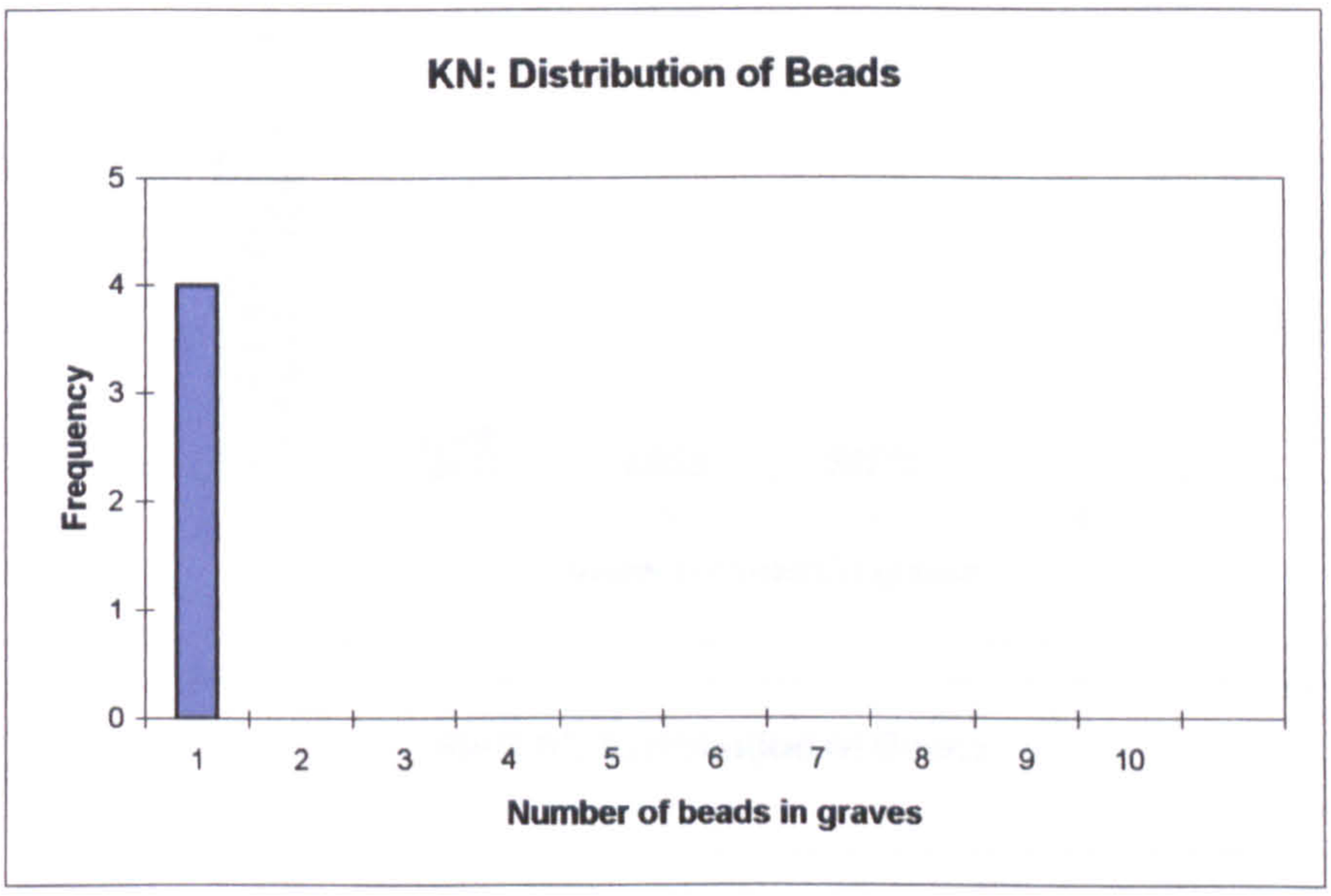
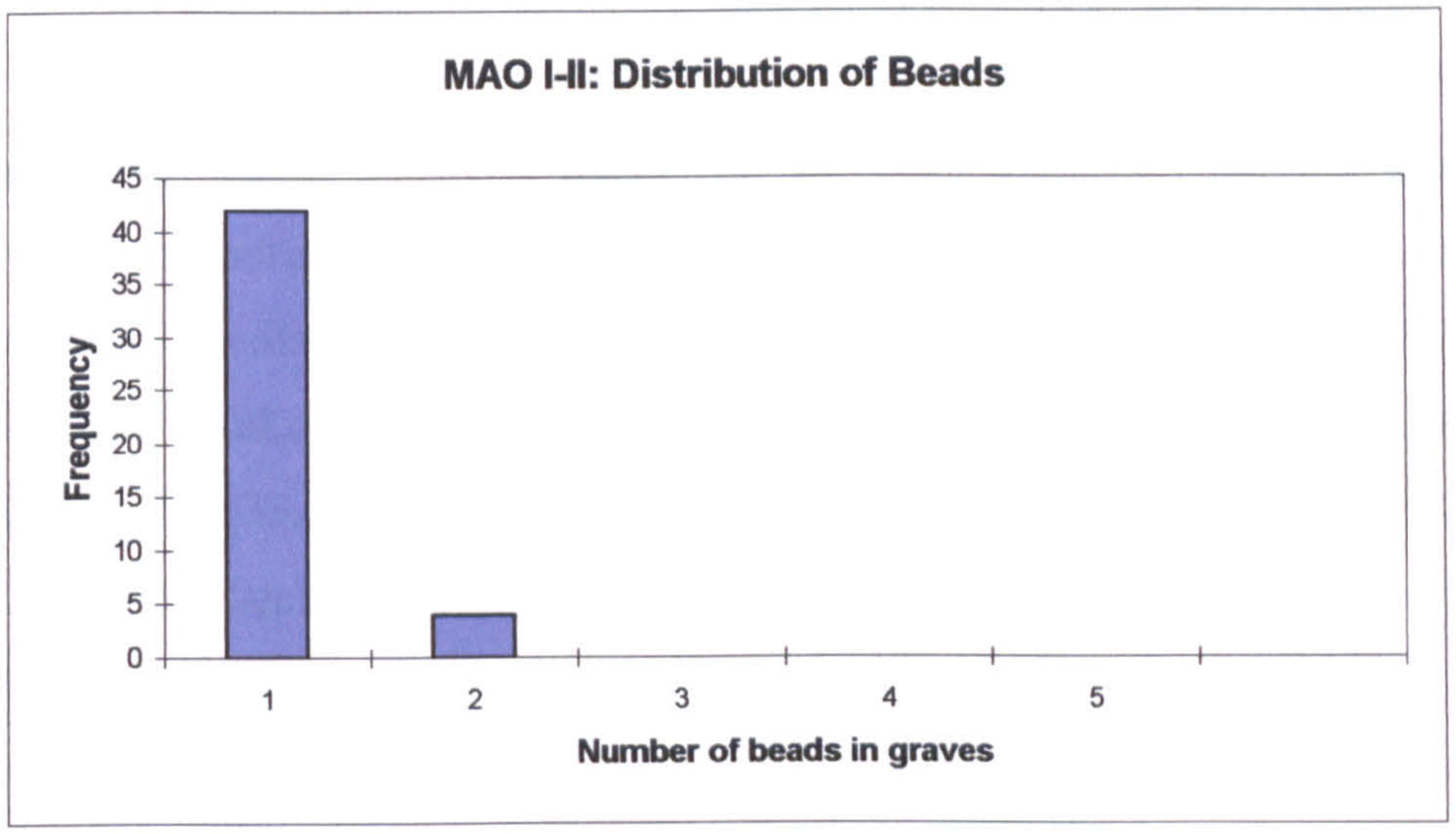
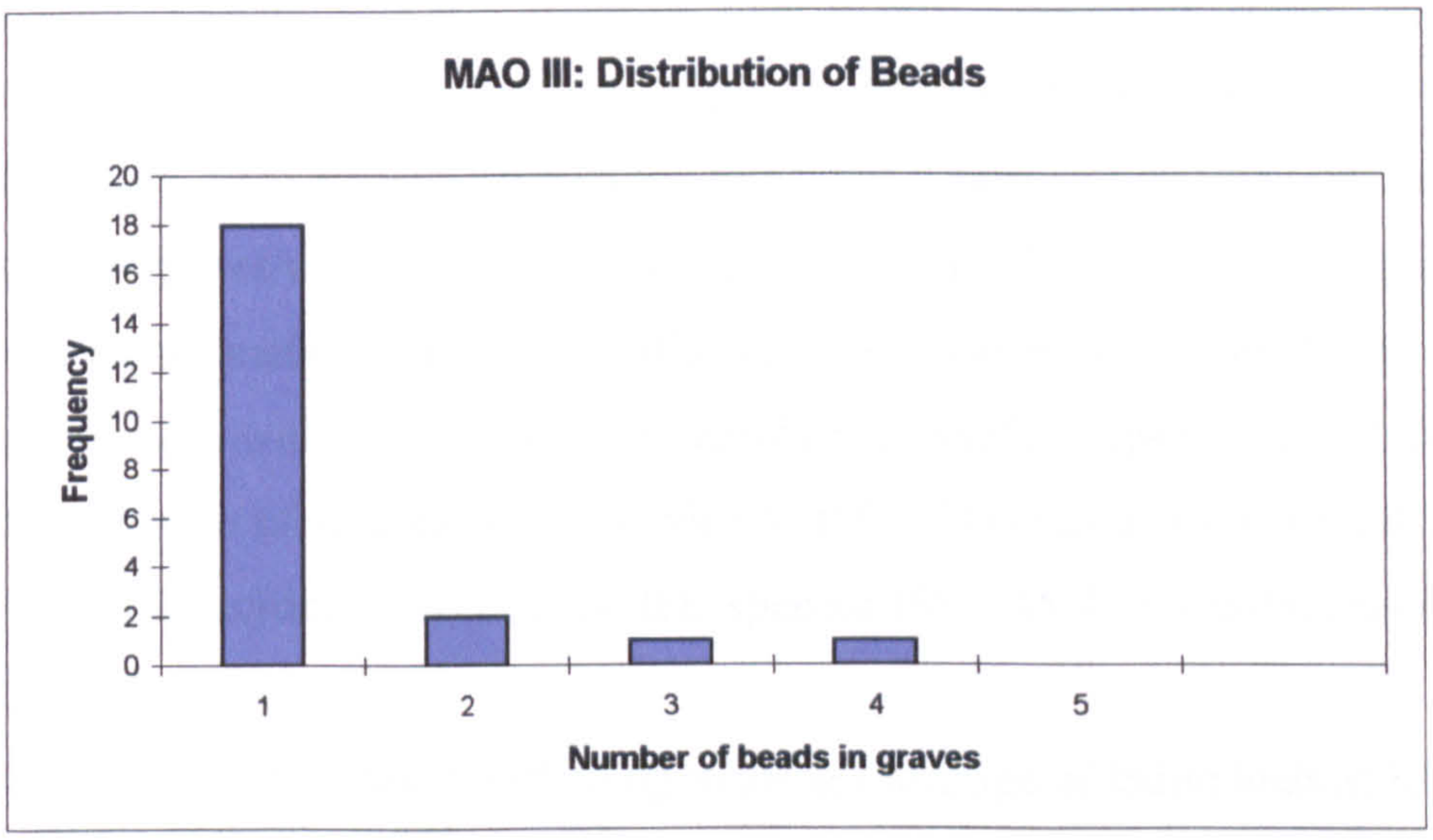


Figure 6.20: KHD and KN Frequency Distribution of Beads





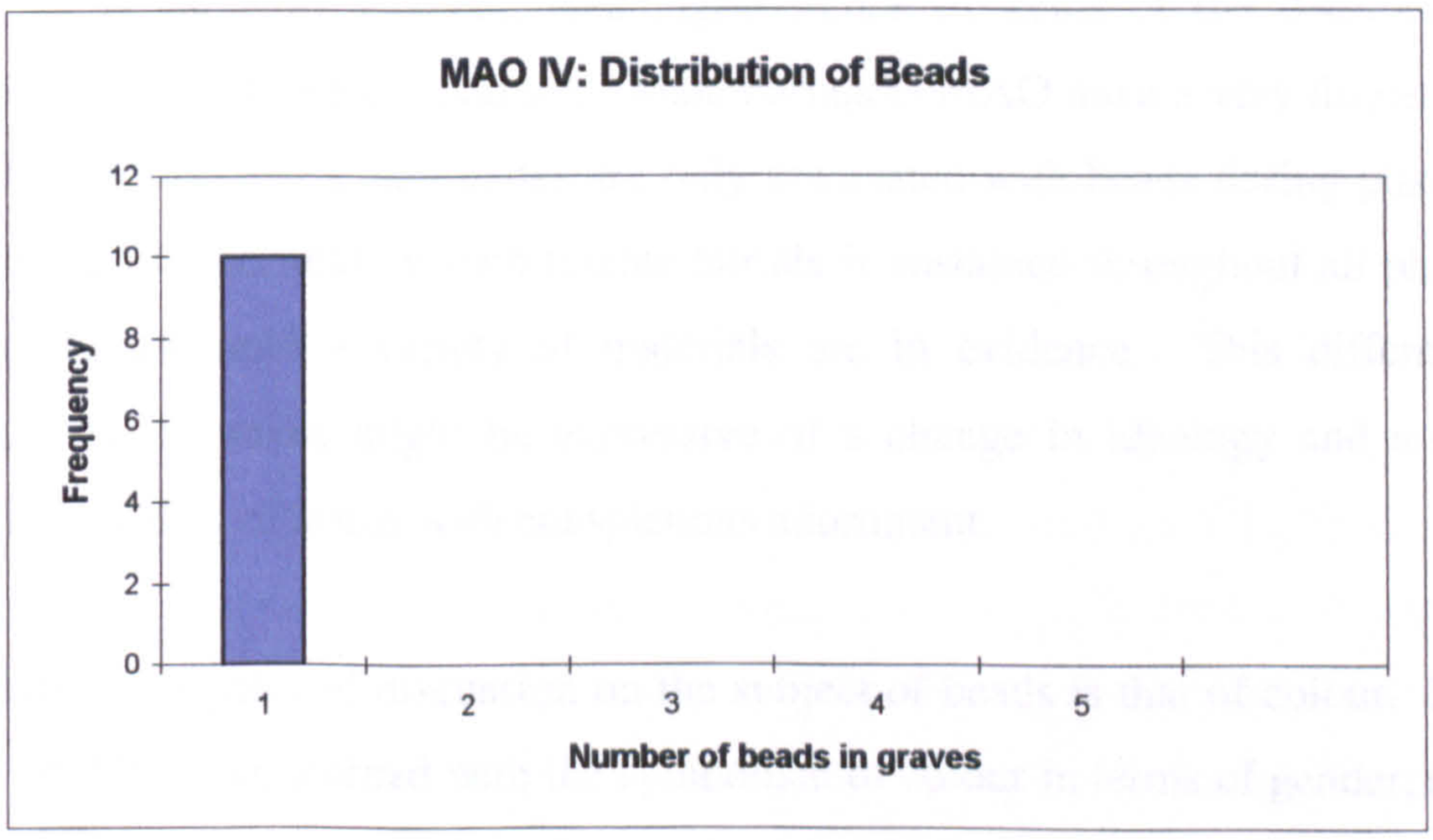


Figure 6.21: MAO Frequency Distribution of Beads

Frequency Distribution of Beads

The materials utilised in the manufacture of beads at KHD, KN and MAO include: shells, faience, agate, carnelian, siltstone, limestone, Egyptian alabaster, gabbro, soapstone, chalcedony, quartz, porphyry, possibly lapis lazuli, basalt, steatite, serpentine, amethyst, and diorite; there are also metals, with copper occurring at KHD and in MAO I-II, and gold leaf and foil at all of the sites (not including MAO IV) (Kroeper 1984, 7; 1988, 13, 15, 17; 1992, 130, 133, 135; 1996, 72, 74-78, 79; Kroeper and Wildung 1994; 2000; Figure 6.74). Carnelian is most common at MAO, agate and faience at KHD, and faience and carnelian at KN.

The distribution of beads at KN is narrower than at KHD, occurring within 3% of the graves as opposed to 5%, and for MAO it ranges through the phases from 27% to 65% to 29% (see Figures 6.20 and 6.21). In addition to having a narrower distribution, beads are also restricted to graves of between four and seven types at KN, correlating well with the contemporary MAO material (IV). At KHD, however, and in the earlier MAO phases, beads occur in graves with the full variety of numbers of artefact types. These differences are interesting in view of Adams and Ciałowicz's (1997, 31) comments that beads are not commonly found in 'middle-class burials' (cf. Spencer 1993, 45-47 on metal jewellery).

Due to the paucity of information pertaining to the sex and age of individuals at KHD and KN, it is not possible to ascertain meaningful trends in terms of the distribution of beads/types of material and age and sex. Male burials at MAO have a very limited range of materials used for beads, and males are only associated with beads during phases I-II and III, whereas the correlation with female burials is sustained throughout all phases of the cemetery's use, and a variety of materials are in evidence. This difference in correlation with the sexes might be expressive of a change in ideology and a greater association of women of status with conspicuous adornment.

A further important point of discussion on the subject of beads is that of colour. Hassan and Smith (2002) are concerned with the symbolism of colour in terms of gender, and the strongest connections in terms of artefact types and colour. In terms of the evidence for beads, the link between the colour green (which they consider to be of strong female

association) and female burials is not striking (Hassan and Smith 2002, 49, 63). However, it is nonetheless clear that beads of siltstone (greenish-grey) and faience (which can be blue, green, or white), occur in all phases at MAO with females and children, but only once in a male burial (Hassan and Smith 2002, 49, 63). There is also a closer relationship with females and children and metal items of jewellery. Baines (2000, 36) notes that turquoise was prized for its appearance, and was imitated by faience, which may be produced in a variety of colours, including blue, pale green and white; faience beads occur with females and children at MAO, but only once in a male burial. The most common colour for beads is red (carnelian, garnet), but this is found widely with individuals of both sexes. Robins (2001, 292) discusses the meaning of red as 'hot and dangerous, but also life-giving and protective', and it is considered in relationship to the red colour of the rising and setting sun. In addition, Robins (2001, 292) refers to Chapter 156 of the Book of Going Forth by Day and the activation of an Isis-knot amulet of red jasper, suggesting the symbolic connection between blood, power, and the colour red: 'Thou hast thy blood, Isis; thou hast thy power, Isis' (Allen 1974, 155). As the chapter continues, however, it remains to be seen whether any particular colours or materials seem more closely associated with male or female burials.

Distribution of Cones

The artefacts, termed as 'cones' are found at KHD, in grave 1008, but are not noted at KN, MAO or TIA (Hassan *et al* in press). These cones are made of faience and their purpose is unknown, although it may be possible that they were used as gaming pieces (B. Adams *pers. comm.*). Further reference to gaming pieces will be made below in the discussion on SBS items at MAO and TIA. Certainly board games were placed in tombs as early as the First Dynasty (Taylor 2001, 100), and this currently seems the only reasonable explanation for these cones. The presence of the cones at KHD is within a grave of seven different artefact types, and one of only two graves at KHD containing a *serekh*, that of King Sekhen (Ka) (Hassan 2000a; Hassan *et al* in press). Furthermore, similar cones do occur at other sites in Egypt, and Hassan and Smith (2002, 49), in their discussion on grave goods from Naqada, Matmar and Mostagedda, mention the presence of both leather and clay cones.

Distribution of Pendants

The materials used for pendants at KHD are sandstone, agate, lapis lazuli, Egyptian alabaster, greywacke and siltstone; at KN copper is the only determined material out of a total of two pendants; and at MAO the only confirmed material for this rare item is either siltstone or soapstone, described as 'dunkelgrauer – weisser Talkschiefer (Speckstein)' (Kroeper and Wildung 1994, 86; Kroeper 1996, 73-74). It seems that at KHD, MAO I-II and KN pendants are roughly distributed through graves of three to four types, whereas in MAO III and IV, they only occur in graves of six and eight types, respectively (Kroeper 1996, 78, 80). Pendants are rare at all sites, with the maximum number of eight being recorded at KHD, one of which is associated with an eight year-old child in a double burial.

The evidence from MAO suggests a greater association between pendants and female graves, since all occurrences occur in graves with palettes, apart from one confirmed occurrence in a male burial without a palette (grave 202); notably only graves with pendants are not confirmed as female (Kroeper and Wildung 1994, 86; Kroeper 1996, 73-74, 78, 80). In view of the low number of pendants in evidence, it would seem inadvisable to take it as an indicator for inferential purposes. In so far as commenting on the possible significance of materials, this would also prove rather problematic in view of the limited evidence, and the lack of confirmation of many of the raw materials.

Distribution of Bracelets

Bracelets are also rare within the mortuary assemblages, and with the exception of KHD and MAO I-II, are generally associated with burials containing a high number of artefact types. There are 14 occurrences at KHD, only two at KN, four during MAO I-II, three in MAO III, and by MAO IV there is only a single occurrence. Grave 2275, the richest grave in the MAO cemetery (MAO IV), a child burial, contains a shell bracelet, whereas the other items included within this variable bear more resemblance to bangles (Kroeper 1992, 135).

It might be that in periods chronologically later than MAO I-II, bracelets have a higher correlation with females, since at KN the grave with bracelets contains palettes (female-

associated items), and during MAO III all of the graves with bracelets contain palettes. The pattern from KHD is slightly different since only four out of the 14 graves with bracelets contain palettes, and one of these graves (913) also contains both a copper chisel and a flint knife, items more closely associated with male burials.

In terms of materials, the greatest variety is exemplified through the finds at KHD, and the vast majority of MAO bracelets are fashioned out of metal. The presence of copper jewellery is primarily in female contexts at MAO and is, therefore, informative in terms of the raw material being available to both sexes, albeit taking on particular forms. The one occurrence of a copper bracelet at KHD was found together with female-associated grave goods, namely a cosmetic palette and beads; it is notable that a further three graves at KHD (316, 651 and 873) also contained palettes and beads, and in the case of grave 873 palettes, beads and a pendant.

As far as other materials are concerned, there is only one other non-metallic bracelet at MAO, in the I-II phase, made of siltstone (schist), whereas at KN we find two bracelets of flint, and at KHD the widest range of materials: copper, bone, ivory, flint, Egyptian alabaster, siltstone and greywacke. Siltstone is the second most common material for stone vessels at KHD, and the most common for bracelets is either siltstone or greywacke. Due to the lack of sexed graves with bracelets, it is difficult to comment on whether this greenish-grey stone is indeed to be more associated with females in this context, but in three graves we do find other strongly female associated items, namely siltstone palettes. Ivory bracelets (two) are extremely rare at KHD, and have no association through sex, although at MAO, as will be seen in the section on SBS, ivory is more closely associated with females. The lack of ivory at KHD may be a consequence of the high salt levels affecting preservation. Flint bracelets are found at both KHD and KN, and while we have seen that this material can be associated with either sex, the KN bracelets are in a grave that also contains a palette.

Distribution of Palettes

Cosmetic, or make-up, palettes functioned to grind pigments for cosmetic purposes, and are sometimes found together with the grinding pebble stones. All of the palettes from

KHD, KN and MAO are made of siltstone (also referred to as schist, see Section 4.3.3; Klemm and Klemm 1993, 369-371; Kroeper 1996, 72). The types of palettes vary considerably, and this is exemplified most clearly through the MAO data, with an evolution in type from the very early rectangular/rhomboid shapes, to shapes of zoomorphic design, to much simpler palettes of rectangular shape, sometimes decorated simply with engraved parallel lines around the edges (Kroeper 1996; Figures 6.75-6.76). Spencer (1993, 28, 41) notes that the Naqada I period witnessed the greatest range of zoomorphic palettes, whereas by the end of the Predynastic the range decreases, with more schematic attempts at the representation of animals. Kroeper (1996, 81-82) does warn, however, that the 'chronological distribution' of the palettes at MAO displays differences from other sites, showing a great increase between phases I-II and III, then a swift decrease into phase IV, while at other sites in Egypt there is a general decline by the end of the Predynastic (Spencer 1993, 41).

The distribution of palettes between the sites varies considerably, with 18 at KHD, only four at KN, and 32 at MAO (I-II five, III 21, IV six). In terms of the distribution of palettes over time, KN fits neatly within both the chronological framework and distribution of MAO IV, since by this phase palettes are declining in popularity and only found in graves with in excess of three artefact types. KHD has a slightly wider range of graves containing palettes, although this may be partly explained by the fact that KHD overlaps with both MAO III and IV phases, and that MAO III also has palettes associated with a wide range of numbers of types. Multiple occurrences of palettes are only found in association with at least five other artefact types (KN and MAO I-II and III) (Kroeper 1996).

In terms of palette typology, no zoomorphic palettes have been found at KHD to date, although there are a number of palettes with incised lines around the edges, as found at MAO from phase III onwards. Spencer (1993, 29-31) notes that due both to the large size of some palettes and to the zoomorphic forms there may be a 'possible magico-religious function', in addition to practical use. In MAO I-II fish-shaped palettes occur both in the grave of an 18-25 year-old, and a 13-14 year-old, and a bird-headed palette is associated with a 14-20 year-old female (Kroeper 1996, 72-73; Figure 6.76). It is worth noting that

in all of these cases, a hole (probably for suspension purposes) had been drilled through the palette, and Midant-Reynes (2000, 180) infers from this that the palettes may originally have been 'physically tied' to the body (Kroeper 1996, 73).

Only during the MAO III phase do palettes with incised parallel lines running along the edges of the object occur (in 20 out of 21 graves with palettes), and the majority of these graves are associated with female burials (Kroeper 1996, 74-79, 81). It is only in MAO III that there is evidence for palettes with male burials, and then only twice, despite this phase having the highest frequency of palettes (Kroeper 1996, 82). One of these burials (1050) also contains a copper chisel, an artefact type also found in conjunction with palettes in graves 714 and 1008 at KHD (Kroeper 1996, 77). Palettes with box-like depressions are confined to MAO IV, where there are only two such palettes in evidence, both associated with female burials (Kroeper 1996, 79, 80). In terms of female association with palettes it is worth noting that in neither of the two large tombs at KHD do we find this type, nor are there any palettes in the eight 'elite' tombs at MAO, although there is one female burial amongst these.

The association of palettes with females is borne out by evidence from other Predynastic and Early Dynastic sites in Egypt, and as discussed briefly above, the colour of the palettes, in addition to their purpose, also reflects this association; siltstone has a greenish tinge to it (Kroeper 1996, 72). In general, Hassan and Smith (2002, 63) note the symbolic association of the colour green with plants and rebirth, and the close relationship of this colour with female grave goods. It seems feasible that the symbolism is embedded in the combination of material and object, as possibly with bracelets. The object is intended for grinding minerals for cosmetic purposes, and therefore associated with a) making oneself attractive, and b) adornment.

Distribution of SBS

As described in Section 4.1.2, SBS is a variable created for objects made of stone, bone or shell, or others (including mineral pieces) that cannot be allocated any of the other variables. To create separate variables for all of the object types would have resulted in

the addition of many more columns of data, they are therefore listed under one column, and all discussed here.

Overall, while it is difficult to make far-ranging comments about this variable, we can observe changes in types of artefacts and their distribution between the different phases of the MAO cemetery. Only seven graves from KN contain SBS items, with a wide variety of numbers of other artefact types; these SBS items consist of shells, one a tortoise shell fragment, and a piece of ochre. In MAO III and IV SBS objects are largely restricted to graves of a high number of types, whereas in I-II, the objects are more randomly spread throughout the population. As might be expected, the overall number of types does vary depending upon the type of SBS object (Kroeper 1992; 1996; Kroeper and Wildung 1994; 2000).

During MAO I-II most of the low artefact type graves with SBS contain shells and/or galena, with the exception of one grave (148) which contains olive basalt and porphyry gaming pieces, gabbro pebble stones, balls of limestone, serpentine and Egyptian alabaster, pieces of galena and a couple of small wooden rods (Kroeper and Wildung 2000, 78). Graves containing between four and six artefact types have a greater proportion of objects that may fall into the category of gaming pieces, 'vielleicht Teile eines Speiles', and other artefacts, including rubbing stones (Kroeper and Wildung 2000, 78). In addition, the assemblages of two graves (330 and 231) include ivory objects; the former containing ivory needles, together with gaming pieces and a wooden stick, and the latter an ivory spoon and hairpin, together with mussel shells and minerals (Kroeper and Wildung 1994, 116-122, 141-143; Figure 6.77). In MAO III, the SBS items include galena, shells, pebbles and rubbing stones (Kroeper 1992, 1996; Kroeper and Wildung 1994; 2000).

The major difference in terms of male and female SBS artefacts at MAO is the preponderance of ivory with female burials, and the presence of possible gaming pieces, sometimes associated with wooden sticks, in the male graves of phase I-II. In terms of gaming pieces, the faience cones found in grave 1008 at KHD have already been noted as possibly serving this purpose, and the combination of a palette, copper chisel, and now

gaming pieces, might heighten the possibility of this having been a male burial (grave 1050 at MAO, a confirmed male burial, was noted in the section above on palettes as also containing a copper chisel). Bone or ivory gaming pieces are also found within grave B200/160 1 at TIA; some 11 'draught pawns', and a further five pieces, which have been described as either 'flat dice sticks' or 'inlay pieces for a small box' (van den Brink 1988, 83). It is quite likely that the 'flat dice sticks' are just that, since in graves 231, 224 and 148 at MAO, a number of rods or sticks (four, four and two respectively) fashioned out of wood, or possibly bone in the case of grave 231, were found in associated with stone balls; which are, at least in the case of grave 148 described as possibly being gaming pieces (Kroeper and Wildung 1994, 141-143; 2000, 60-62, 77-78).

All of the ivory finds at MAO, with the exception of one unsexed and one child grave (both in MAO IV) are in association with female burials. In MAO I-II these include ivory needles, a spoon and a hairpin, in III ivory needles and a spoon, and in MAO IV, the phase with the highest proportion of ivory objects, pieces of worked ivory, needles, panels of a box, and an ivory box containing miniature stone vessels, with the most variety coming from the child's grave, containing an ivory lion, gaming pieces, cow's leg spoon and a hedgehog, and a female grave complete with an ivory/bone spoon and two ivory needles (Leclant and Clerc 1985, 348; Kroeper 1992, 129-130, 131-136; 1996, 79-80; Kroeper and Krzyżaniak 1992).

One of the ivory items found with females is the spoon, and this may have been intended for use with unguent dishes (Wilkinson 1994, 20). Later examples of spoons include those where the handle takes the form of, for example, a swimming girl and Wilkinson (1994, 22) notes their association with Nut and Hathor and how they 'may reflect a consistent symbolic stress on solar and cosmic rebirth, and of renewed life for the deceased through one or another of these great mother goddesses'. Unguents and other ointments played a symbolic role for the rebirth and 'magical rejuvenation of the dead' (Wilkinson 1994, 92).

The presence of malachite (used for green eye paint) is only attested in two female graves and one grave of undetermined age or sex (Kroeper 1992, 131-134; Kroeper and Wildung

1994, 38, 122; Aston *et al* 2000, 44). Robins (1988, 63) stresses that the presence of unguent jars, kohl pots and mirrors are (as palettes) related to beautifying oneself, and minerals such as malachite and galena may have been ground on the palettes. It is strange, as noted by Kroeper (1996, 84), that only two graves with palettes also contain minerals 'such as galena, ochre or malachite'. Irregular pieces of galena are found with male, female and child burials at MAO during phase I-II and III, although whether the intention here is for grinding into eye paint is unclear (Kroeper 1992, 133; 1996, 84; Ogden 2000, 168).

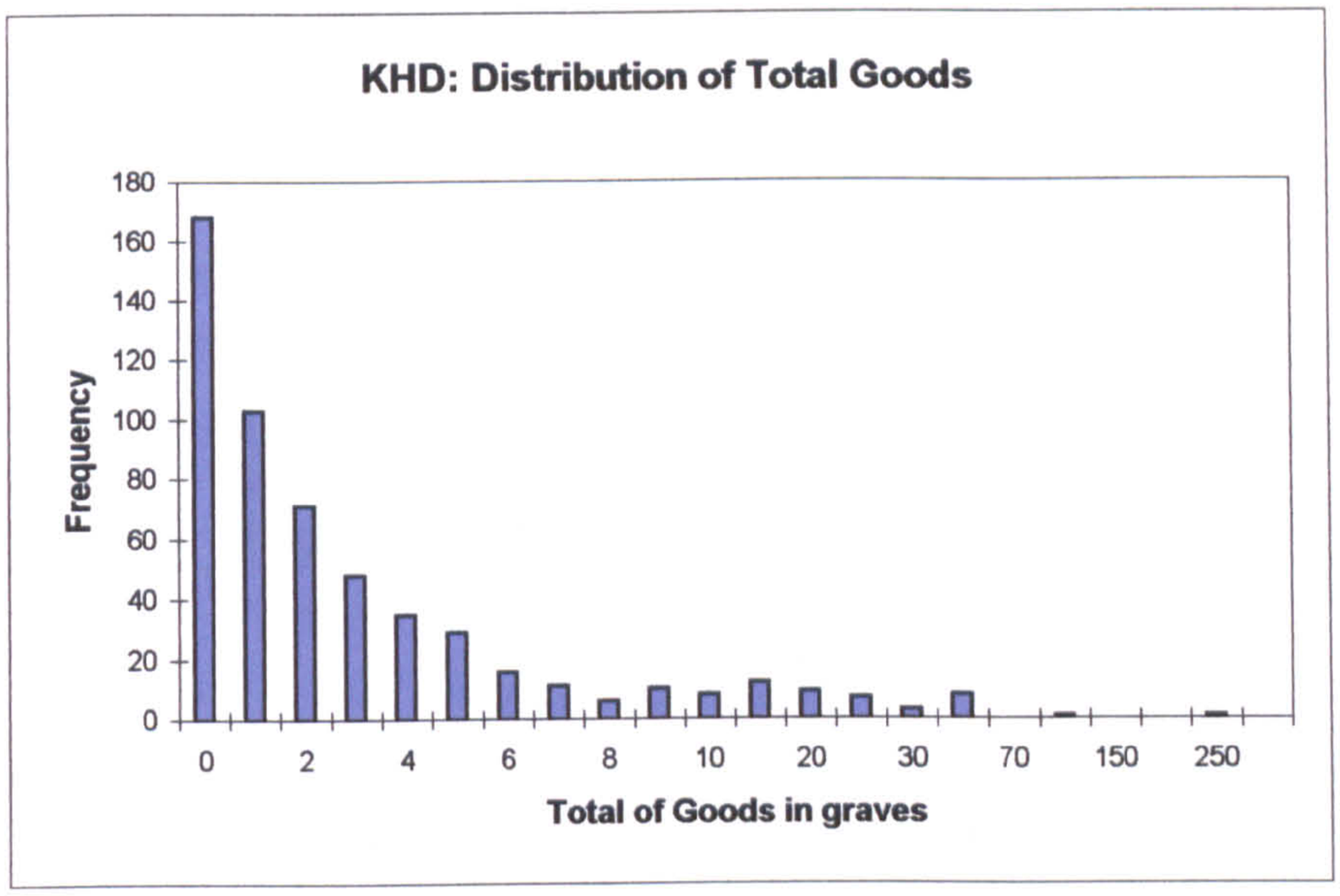
Baines (2000, 37) discusses galena in relation to the worship of one of the earliest Egyptian goddesses, Hathor, at Gebel el-Zeit in the Eastern Desert certainly by the Middle and New Kingdoms, although it is uncertain whether this relationship existed in the Predynastic and Early Dynastic period. Malachite, when ground, is green, which re-asserts once more the possibility of the connection between both the colour green (symbolising growth and life), cosmetics, and females, as stressed by Hassan and Smith (2002, 49; cf. Wilkinson 1994, 108). It is also worth noting that the protective serpent goddess of Lower Egypt (Buto) is named Wadjet, which means 'the green one' (Wilkinson 1994, 108).

There might also be symbolism attached to the presence of gaming pieces since, although considerably later (New Kingdom), the deceased is depicted playing a board game against 'the unseen powers of the afterlife', with victory resulting in a safe passage through the underworld (Wilkinson 1994, 183). Such a scene is represented in the 19th Dynasty of the New Kingdom in a section of the Book of the Dead papyrus of Any the scribe, where the deceased and his wife play *senet* (a board game) and re-appear in the form of their *ba* spirits (Taylor 2001, 21, pl. 8).

An additional artefact type listed under SBS is the macehead, although only in evidence with two burials, one in MAO I-II (224), and the other at TIA (B200/160 1) (van den Brink 1988, 83; Kroeper and Wildung 2000, 61). It is important to point out that at MAO the macehead is located within a Late Predynastic context, in a pit burial, whereas at TIA, the burial is dated to the first half of Dynasty I and is a large rectangular pit burial (van

den Brink 1988, 77-78; Kroeper and Wildung 2000, 60). The maceheads are of similar form, both pear-shaped with a hole drilled through the centre; the MAO example is probably of red breccia, and that from TIA is of limestone (van den Brink 1988, 83; Kroeper and Wildung 2000, 60). Maceheads date back to Naqada I, although it is from Naqada II that the pear-shaped form is taken up, maceheads having previously been disc-shaped (Spencer 1993, 41). Maceheads, like palettes, have also been found as ceremonial objects, including that of king Scorpion, originating from the Main Deposit in the temple of Nekhen, Hierakonpolis, which is Terminal Predynastic in date (Adams and Ciałowicz 1997, 8). It is perhaps unsurprising that we have a macehead from TIA, since here a series of temple shrines persist from the Protodynastic until the Middle Kingdom (Eigner 2000).

The results of the analysis in terms of frequency distribution of specific artefact types have been presented above. Below, frequency distributions of totals of grave goods, grave types and sizes, orientation of the body and potmarks will be discussed.



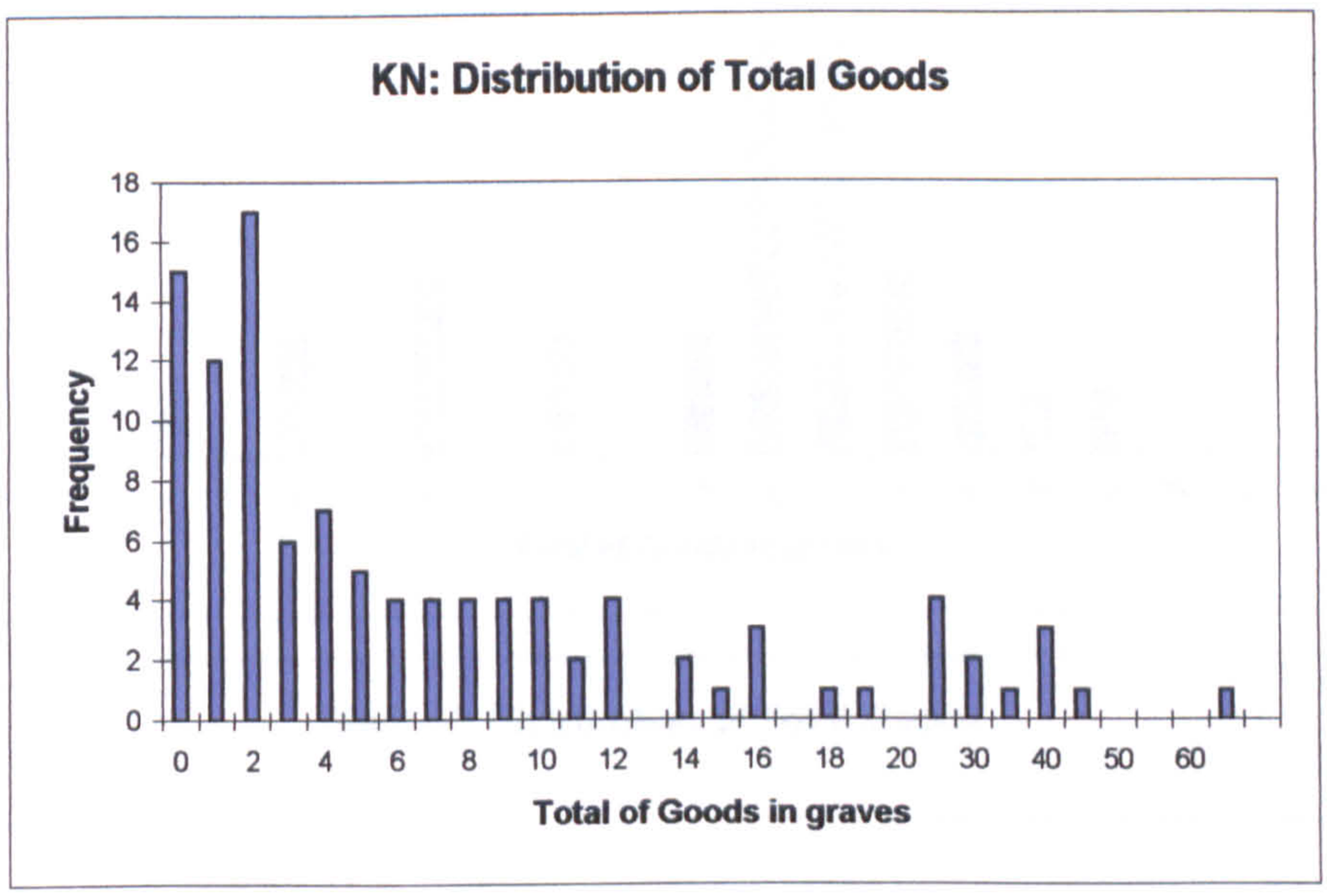
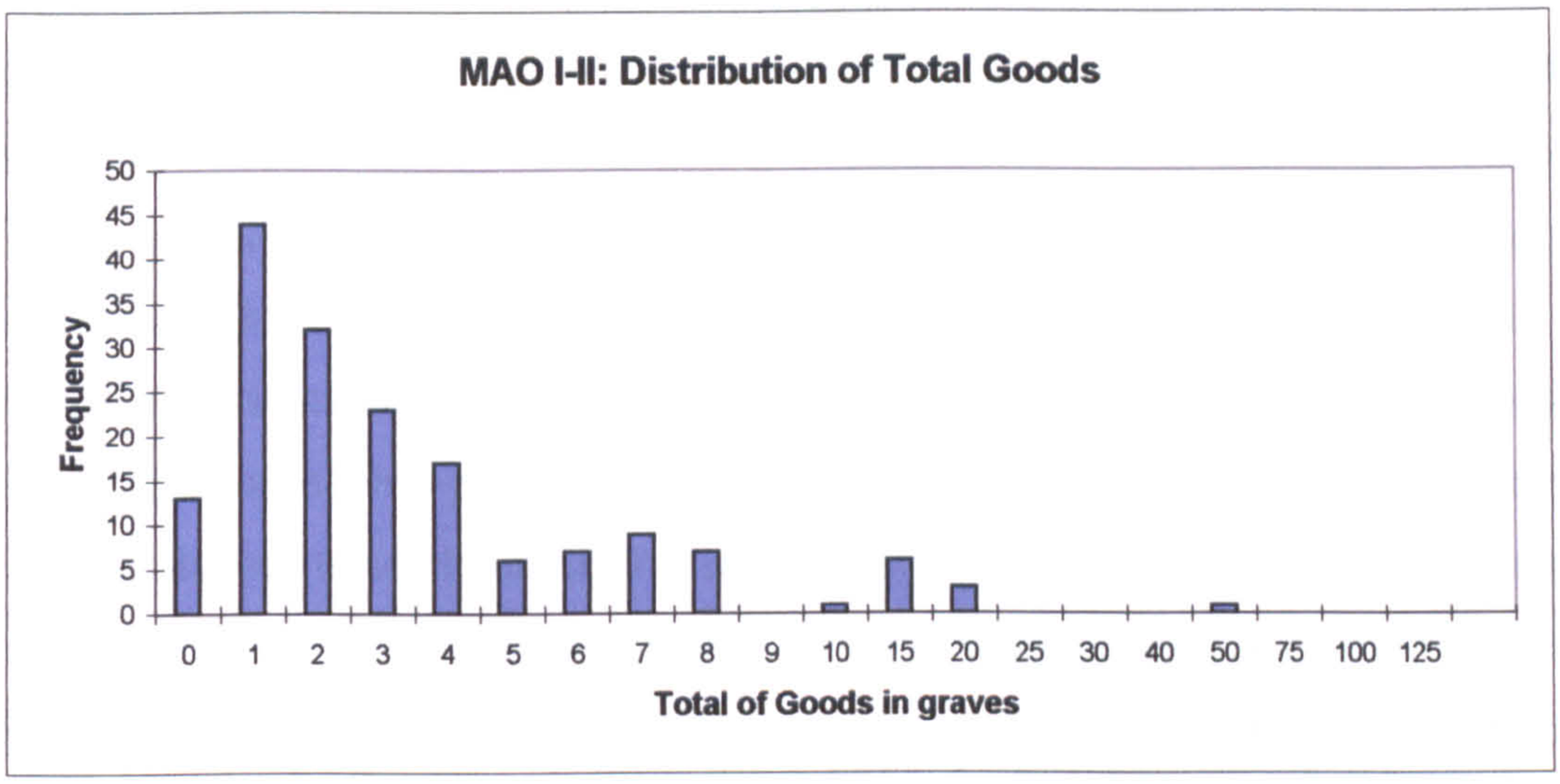
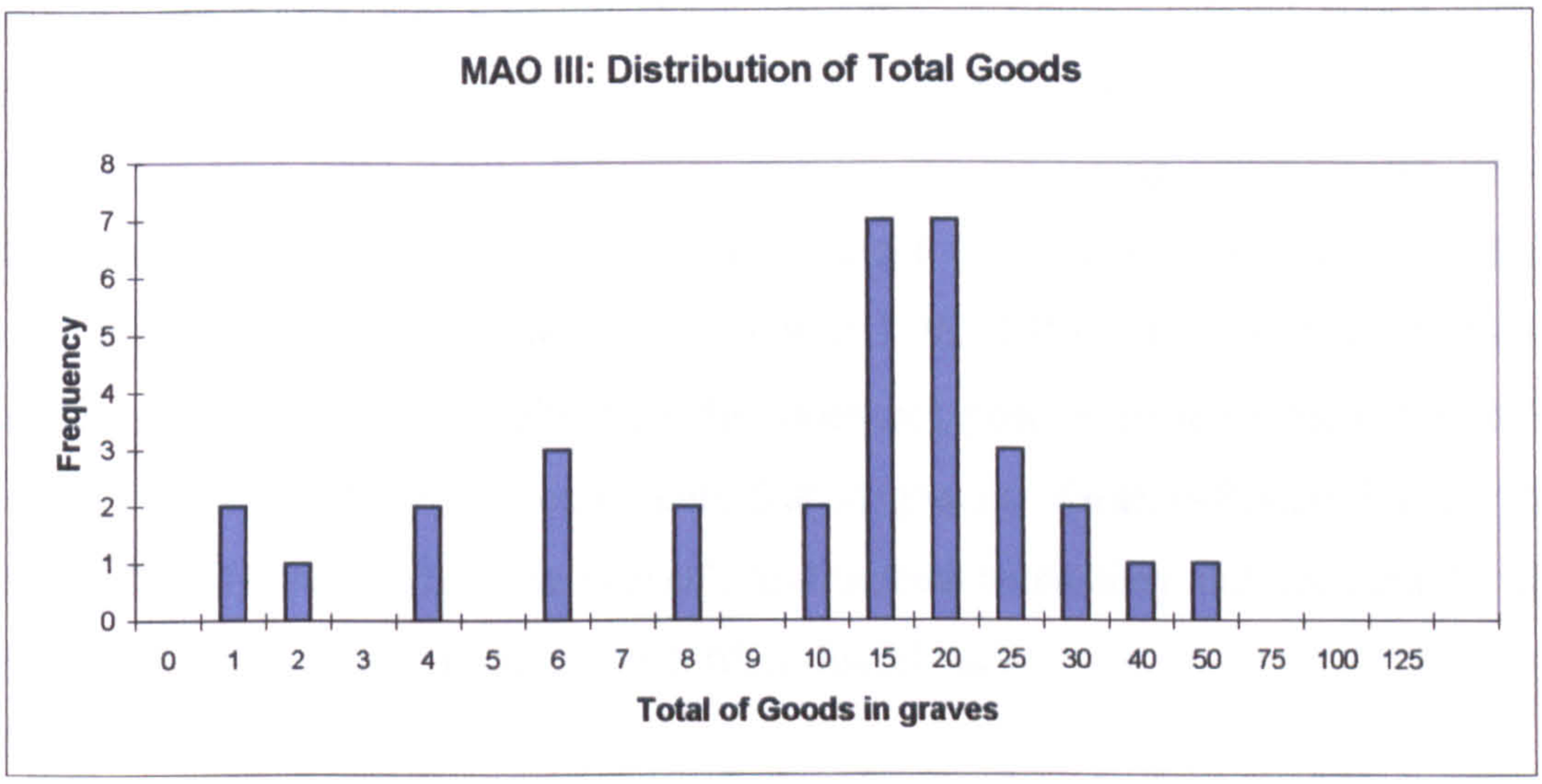


Figure 6.22: KHD and KN Frequency Distribution of Total Goods





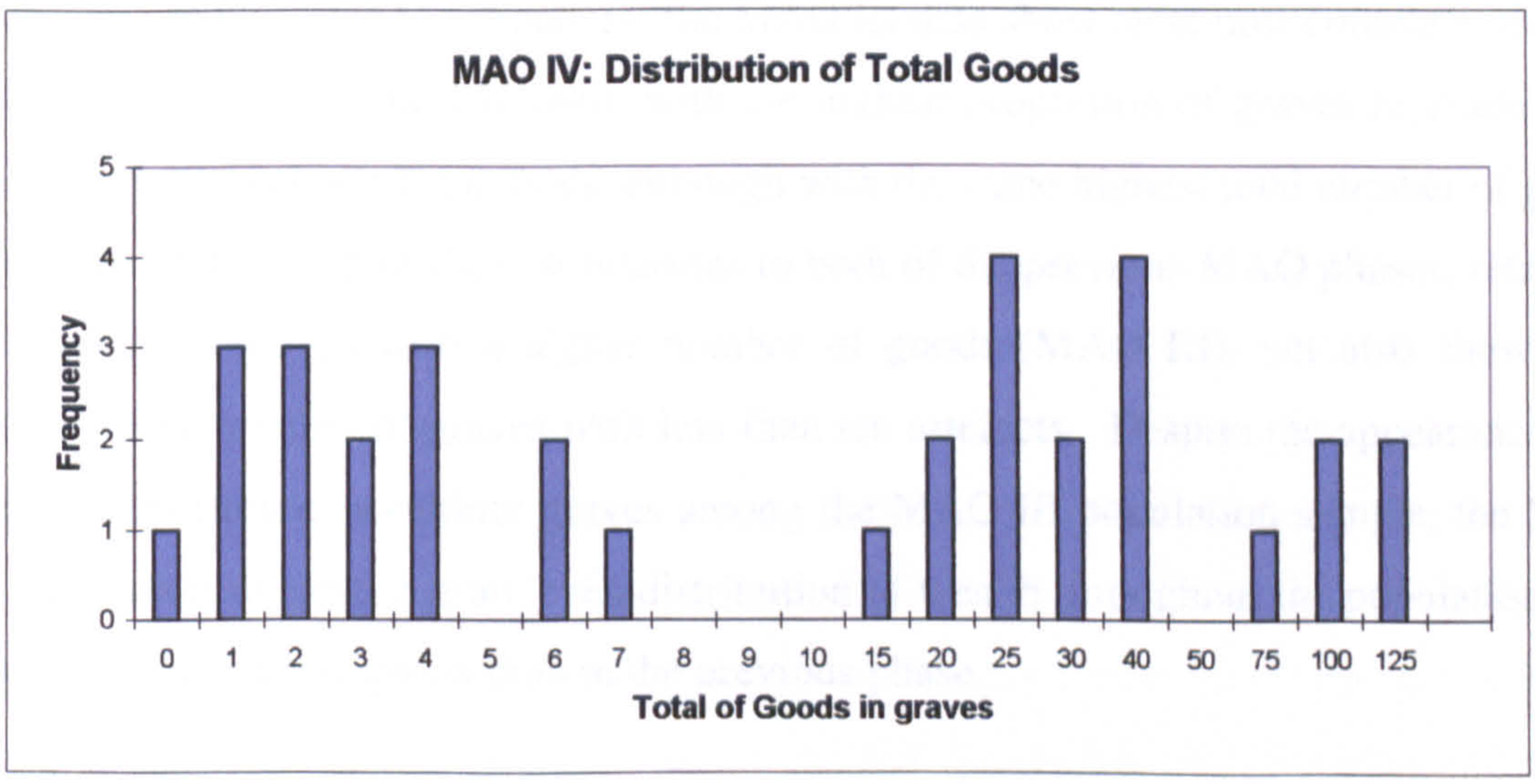


Figure 6.23: MAO Frequency Distribution of Total Goods

Frequency Distribution Totals

The charts in Figures 6.22 and 6.23 show very different distribution patterns of total goods for KHD, KN and MAO. It is very important when considering the total number of grave goods as an indicator of social differentiation to realise the effect that tomb robbery might have on the figures. It is only appropriate here to briefly re-state this issue, since a longer discussion has taken place in Section 4.4. It is apparent that even after plundering the most well-provided for graves still tend to emerge as the wealthiest graves. If we take the one example of KHD where robbing is known to have occurred, tomb 970, while it is clear that this large grave now contains substantially fewer grave goods than the comparable tomb 913 (84 total goods in comparison to 207), the next closest grave in terms of total goods, which is unrobbed, has only 42 items (Hassan 2000a, 37). The pattern at MAO has some similarities in that the 'elite' tombs of phase IV have suffered robbing (Kroeper 1992, 140). However, through the remaining grave wealth, variety of types, and tomb construction we can still detect that these burials are clearly quite remarkable in comparison to the others (Kroeper 1992, 140). There is also the problem of disturbance by later burials, although this does not pose a great problem for statistical analysis. Kroeper (1988, 12) comments that in general 'Graeco-Roman burials did not wilfully destroy the predynastic graves', and indeed when they did accidentally disturb them, they took measures to cause no further disturbance.

Looking to the internal MAO pattern, the MAO III data show an almost complete reversal of the pattern seen in the I-II chart, with the highest proportion of graves represented at the 15 and 20 total goods intervals, although with the same highest total number of goods (50). The MAO IV data show similarities to both of the previous MAO phases, retaining the cluster of graves with a higher number of goods (MAO III), yet also showing a proportionate number of graves with less than ten artefacts. Despite the appearance of a higher proportion of wealthier graves among the MAO III population sample, the MAO IV population suggests a more even distribution of wealth throughout the population, and has higher total grave goods than in the previous phase.

At KHD (Figure 6.22) the majority of the community have poorly provided for graves (the majority with no grave goods) with just a small proportion of wealthy graves,

although notably the grave with the highest total goods has a greater total than the other sites. The pattern expressed by the KHD data suggest that only a very few individuals have come into/taken positions of power that have been re-stated upon death in the burial record. At KN (Figure 6.22), while there are a high number of poorly provided for graves, there is also a consistent number of graves with a higher number of goods. The pattern for the MAO I-II graves (Figure 6.23) displays similarity to the KN chart, in that the highest frequency of burials is not for those with no grave goods, and because in general there is a decline in frequency as the total goods rise. The initial decline in the distribution of total goods during MAO I-II (between one and five total goods) is, however, even more similar to the KHD pattern.

At MAO distinct temporal variations show the population changing initially from a distribution very similar in pattern, if not in chronological period (MAO I-II), to that of KHD, to a greater proportion of wealthier graves, possibly indicating a greater split between the poor and the rich (MAO III). By MAO IV, on the one hand, the distribution is more even between graves of differing totals of goods, yet on the other hand a much wider range exists between the poorest and wealthiest graves. Time and time again the behaviour of the various distribution patterns of the MAO IV data strongly suggest that, in comparison to the other MAO phases, this latest phase has the greatest number of tiers within the community. Ranked society would appear to have been left behind; the sharp poor-rich distinction so clear in MAO III is hardly discernible, with a rather more graduated society emerging by MAO IV.

Orton and Hodson (1981, 113) do warn, however, that results of such histograms may be misleading, particularly where sample sizes are small. They further note that 'it is extremely difficult to demonstrate division or groupings of graves simply from histograms of wealth scores, and that very large samples of graves are needed' (Orton and Hodson 1981, 113). In terms of the present analysis, this would suggest that the data patterns obtained from KHD are likely to be most reliable, since the data from the whole cemetery (as excavated to date) are being utilised, as are the data from the MAO I-II phases. However, the smaller samples from MAO III and IV and KN must be viewed with greater caution since they represent a non-random sample. Where only samples of

the entire population are either required, or as in the present case, available, it must be taken into account that when it becomes either desirable or possible to introduce the entire population into the analysis at a date in the future, then the patterns may produce different possibilities.

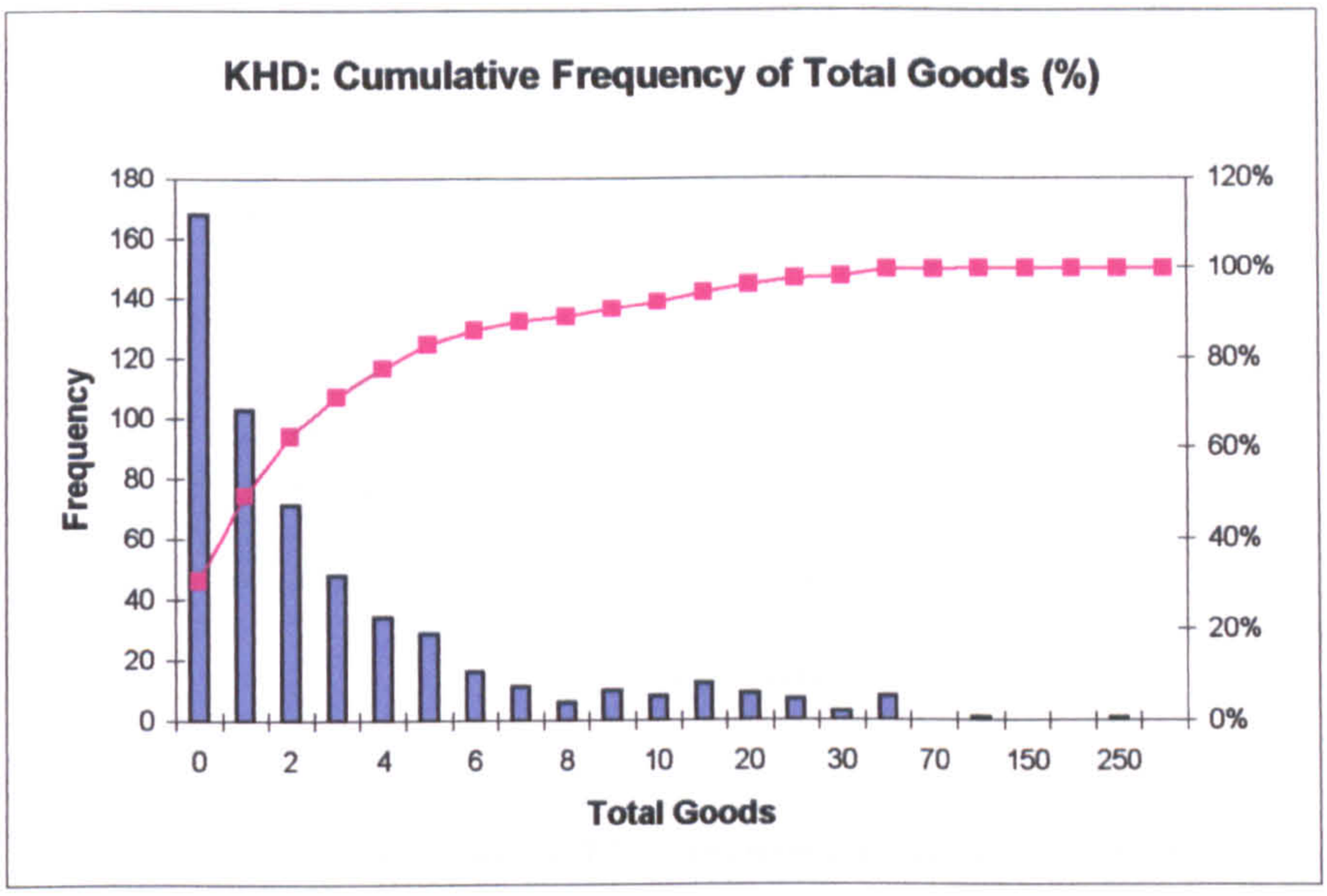
Cumulative Frequency Curves

A further means of considering this data lies in the form of cumulative frequency curves, which are shown in Figures 6.24 and 6.25. These frequency curves are overlain on the total goods bar charts shown in Figures 6.22 and 6.23. The KHD chart displays a steeply ascending curve until six total goods, followed by a gentler curve up to 50, with a plateau thereafter. The manner of this curve suggests that a high proportion of the population are poor, with just a few more wealthy individuals.

The KN data provide a steep incline up to three total goods, followed by a more gradual increase until a jump to 25, with a plateau by 45 total goods. The more gradual increase also suggests a more varied distribution of wealth than at KHD.

The three curves shown for MAO indicate great internal differences between the phases. MAO I-II displays a gradual upward curve with a plateau by 20 total goods, most similar to the pattern seen in the KHD data. MAO III, however, shows a series of sharp increments rising at stages between four and 20 total goods, which plateaus off by 50 total goods. MAO IV displays quite a different curve, with a straight line running up to four total goods, and then a more gently rising curve between six and 20, when there is a sharper increase up to 40, and then a final, slightly less steep incline to the end.

It is generally plausible to argue that where there are more sharp increments within the cumulative frequency graph, there are more divisions within the hierarchy of a society. For example, if we witness a steep rise in the curve/line, then this may be indicative of a large gulf between, in simplest terms, the rich and the poor, however, if the curve is more gradual, or indeed staggered, as we see for MAO IV, then this can suggest a greater spread of wealth. It is important, however, to bear in mind the warnings of Orton and Hodson (1981, 113) as iterated above.



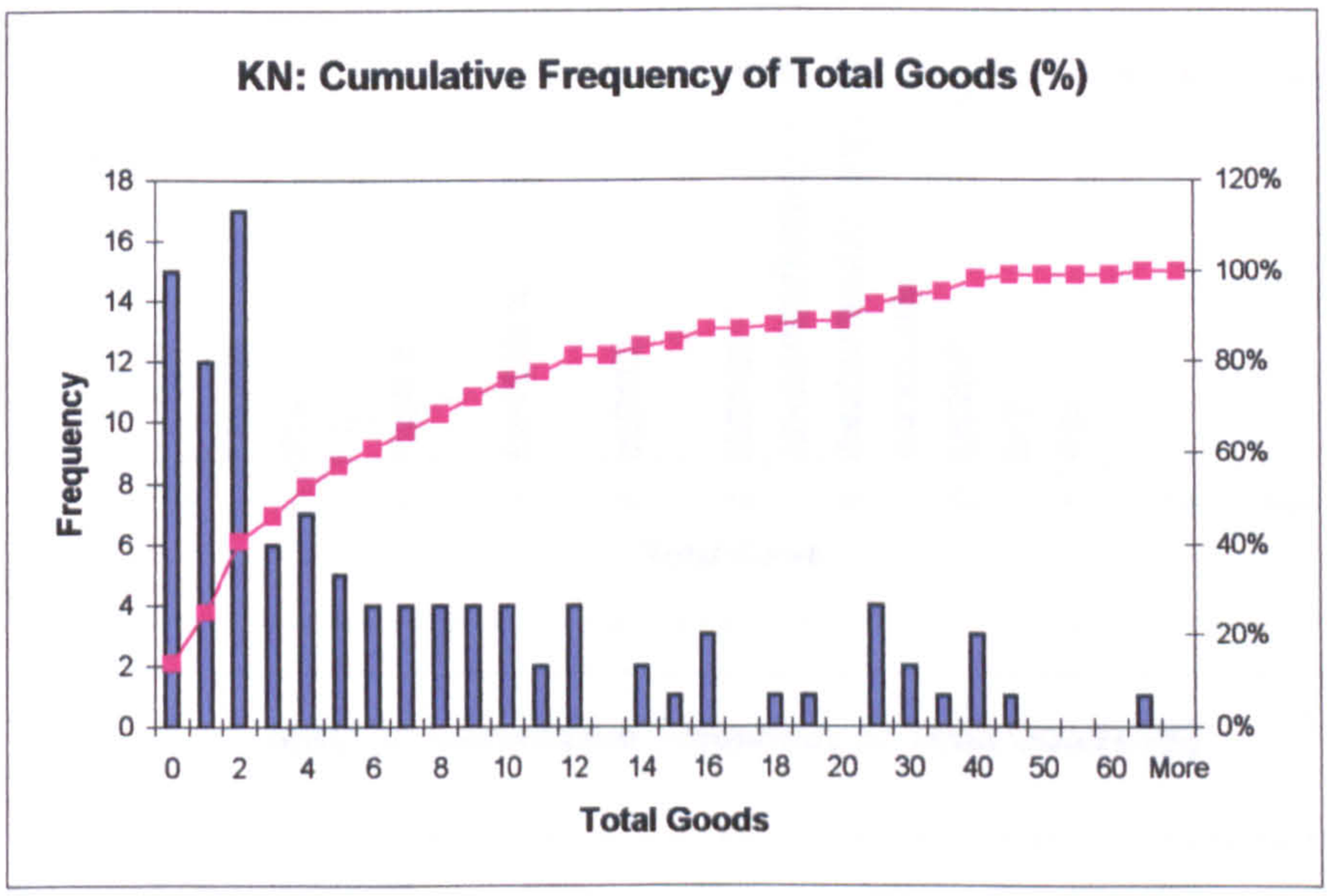
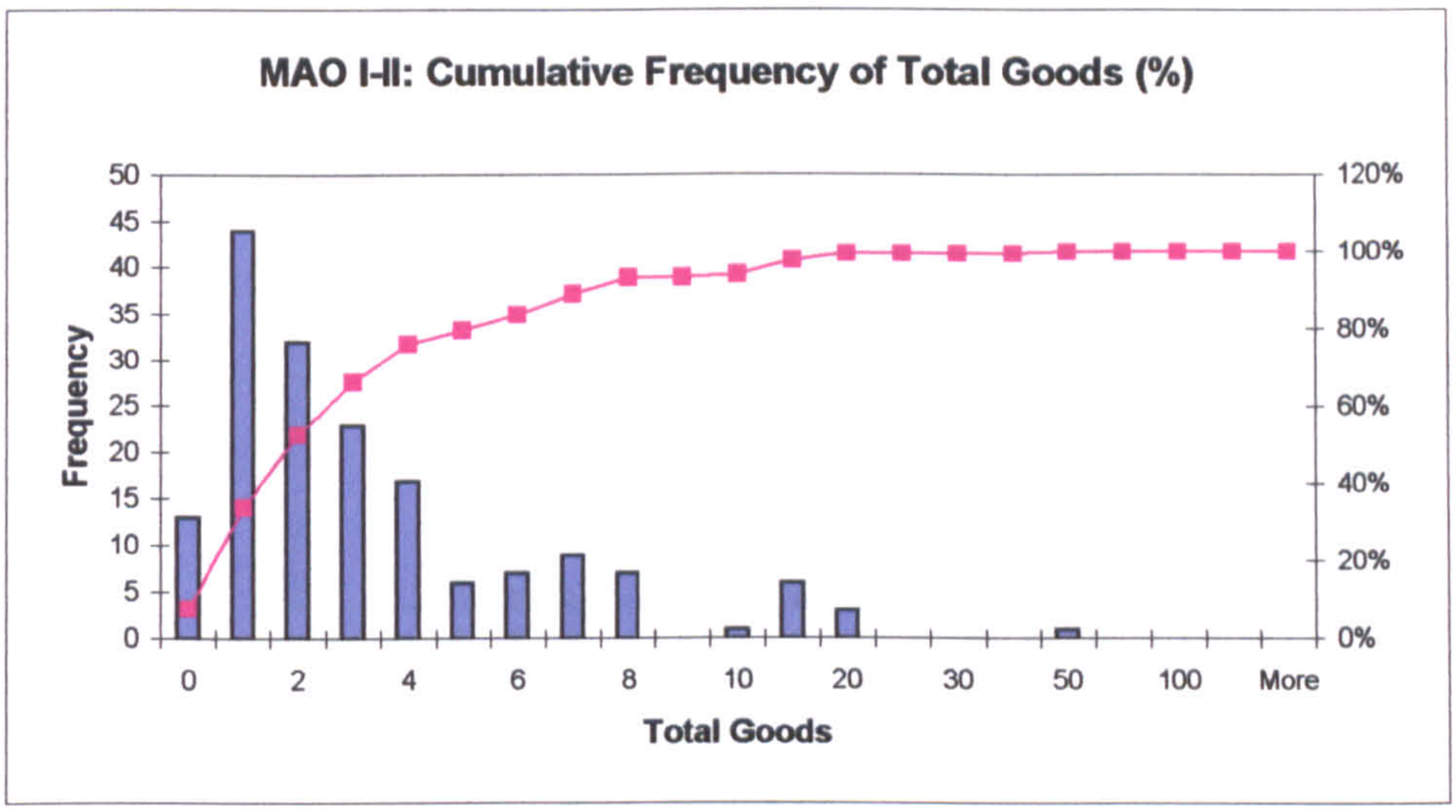
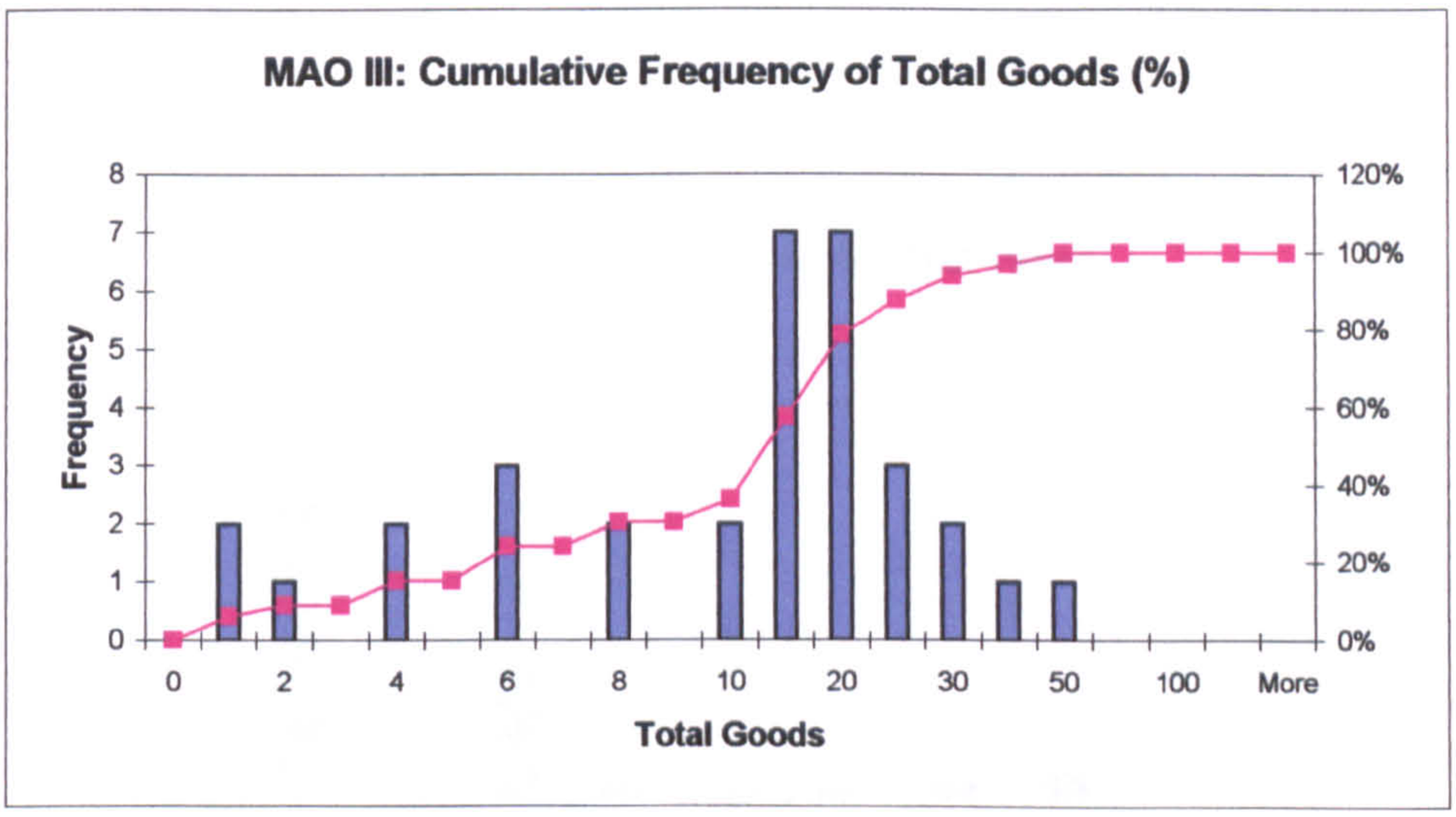


Figure 6.24: KHD and KN Cumulative Frequency of Total Goods





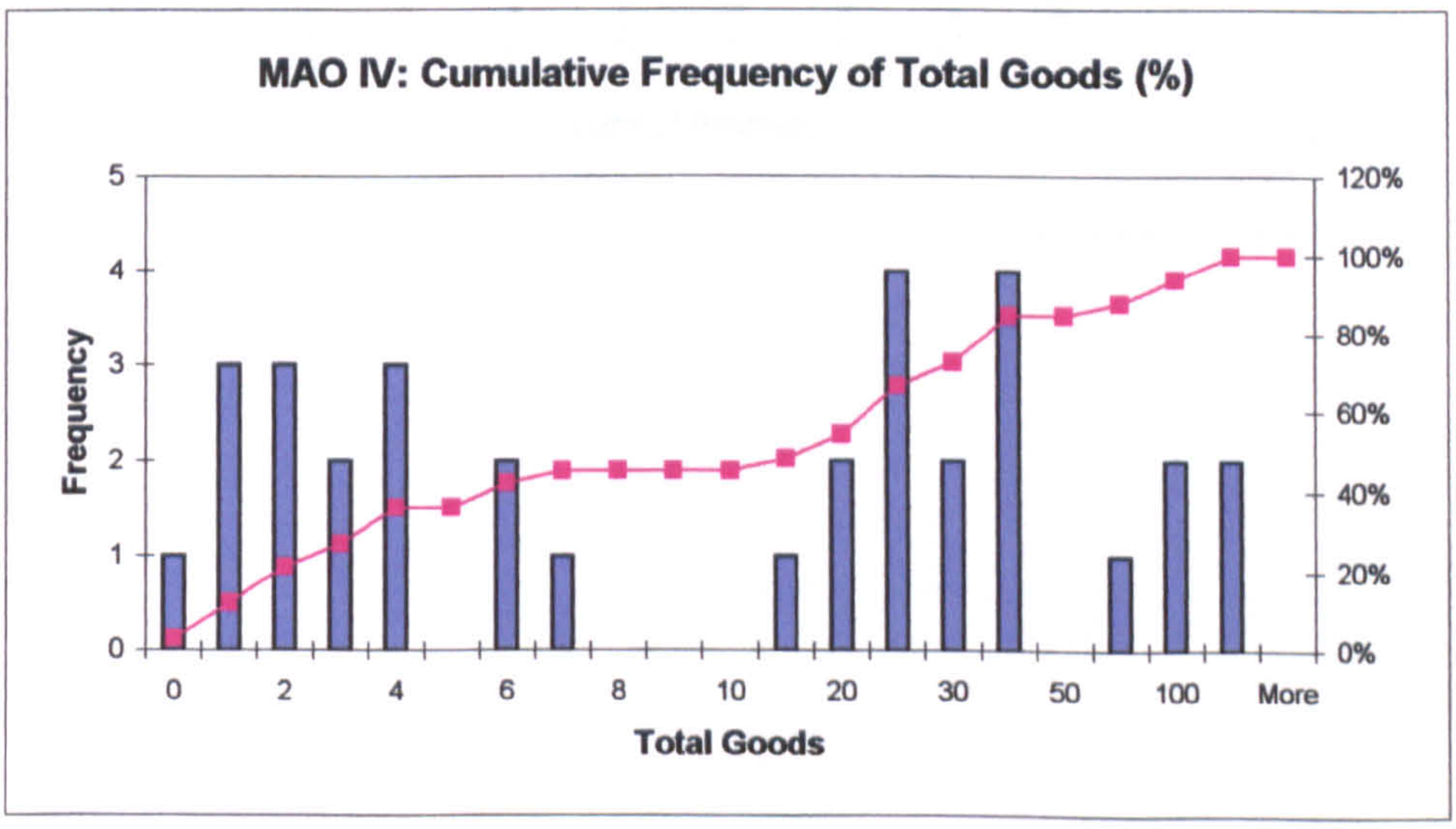
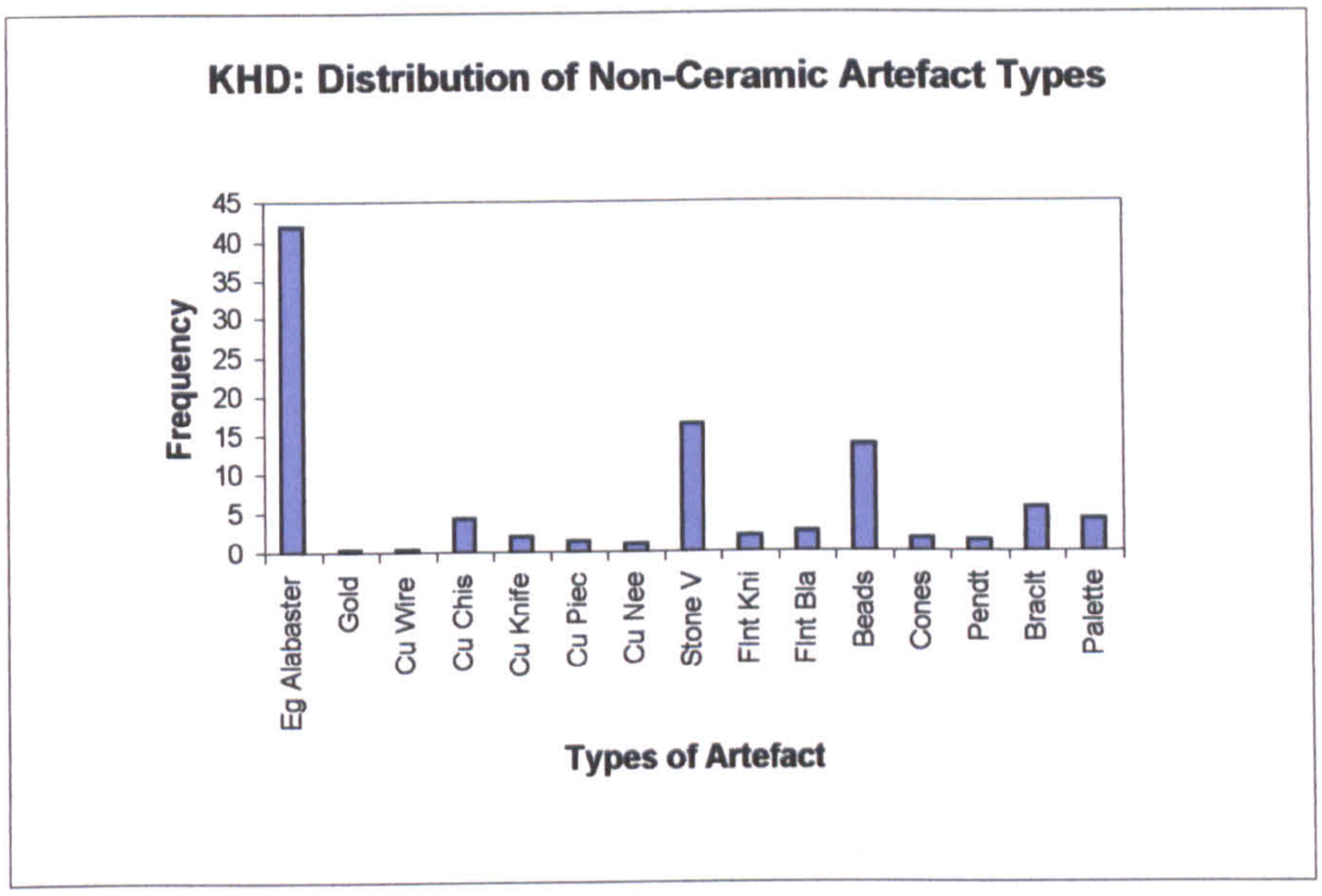


Figure 6.25: MAO Cumulative Frequency of Total Goods



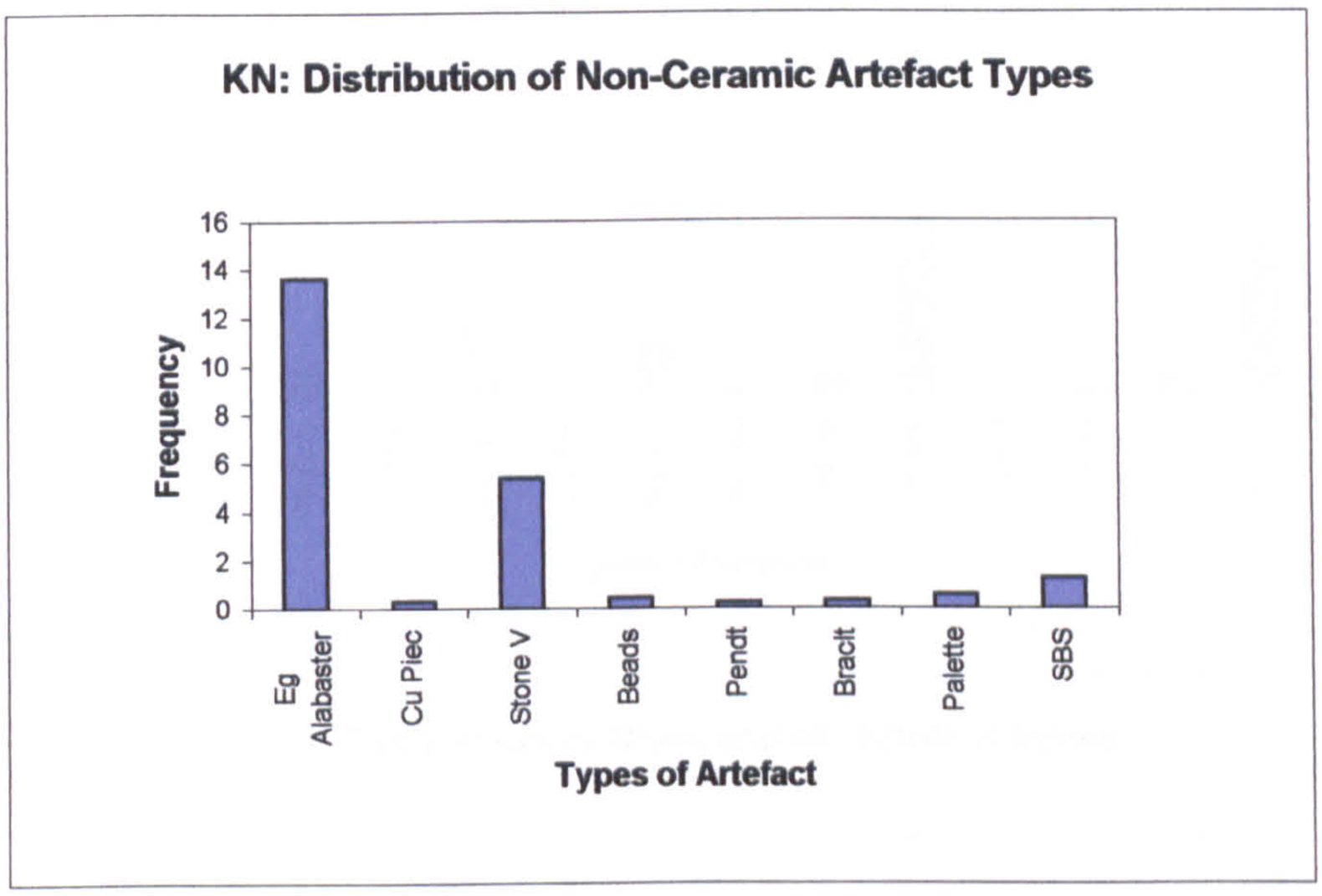
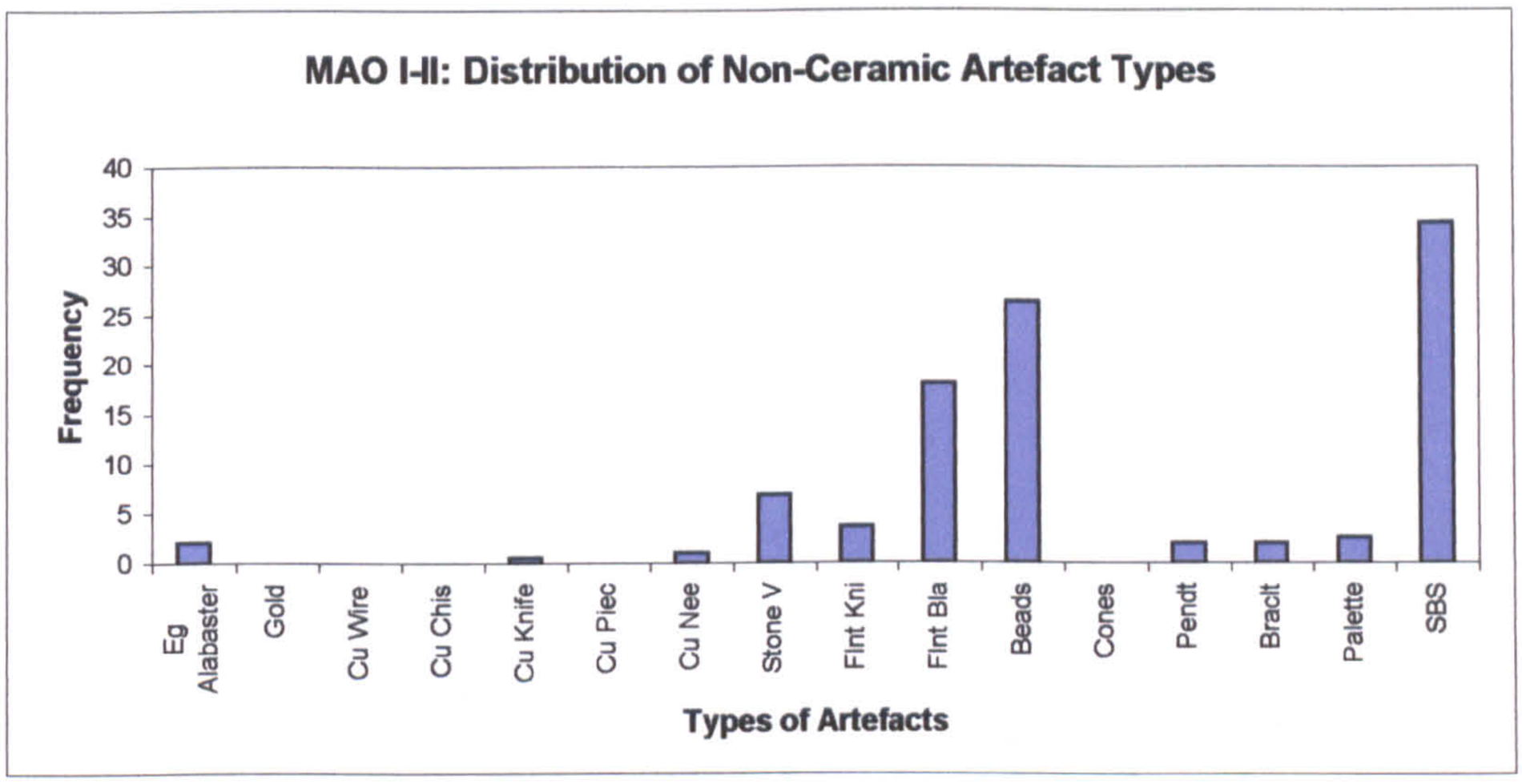
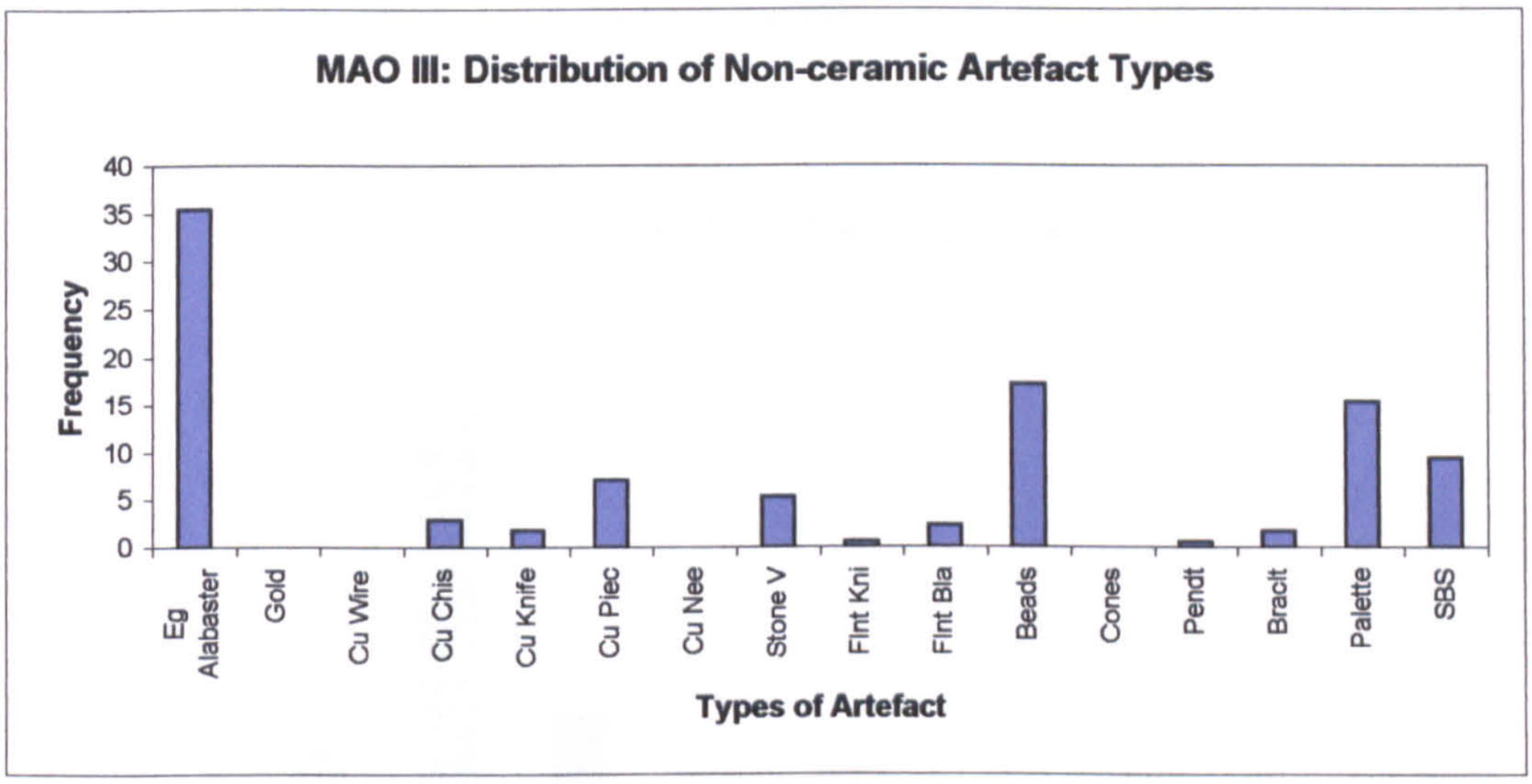


Figure 6.26: KHD and KN Frequency Distribution of Non-Ceramic Artefact Types





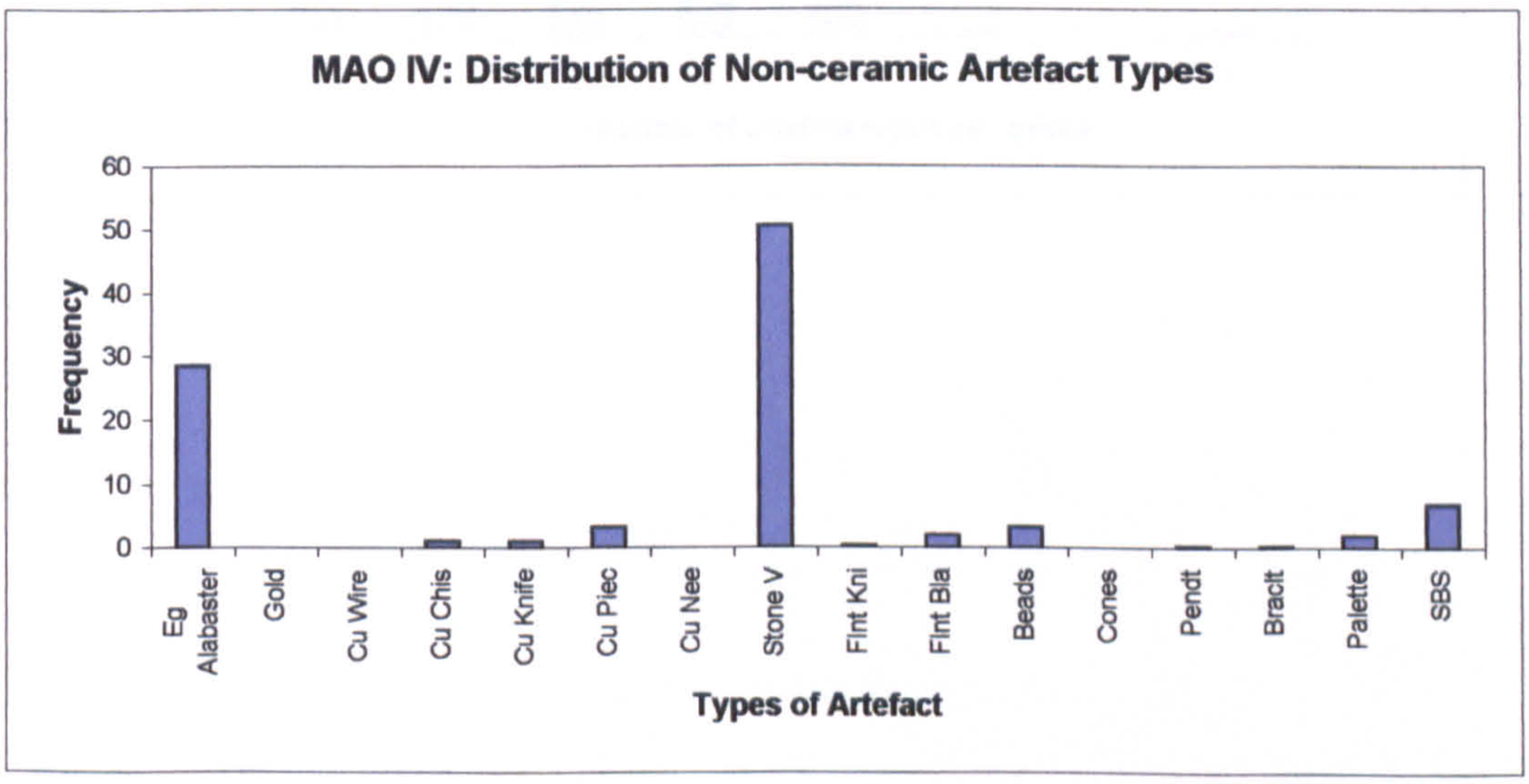
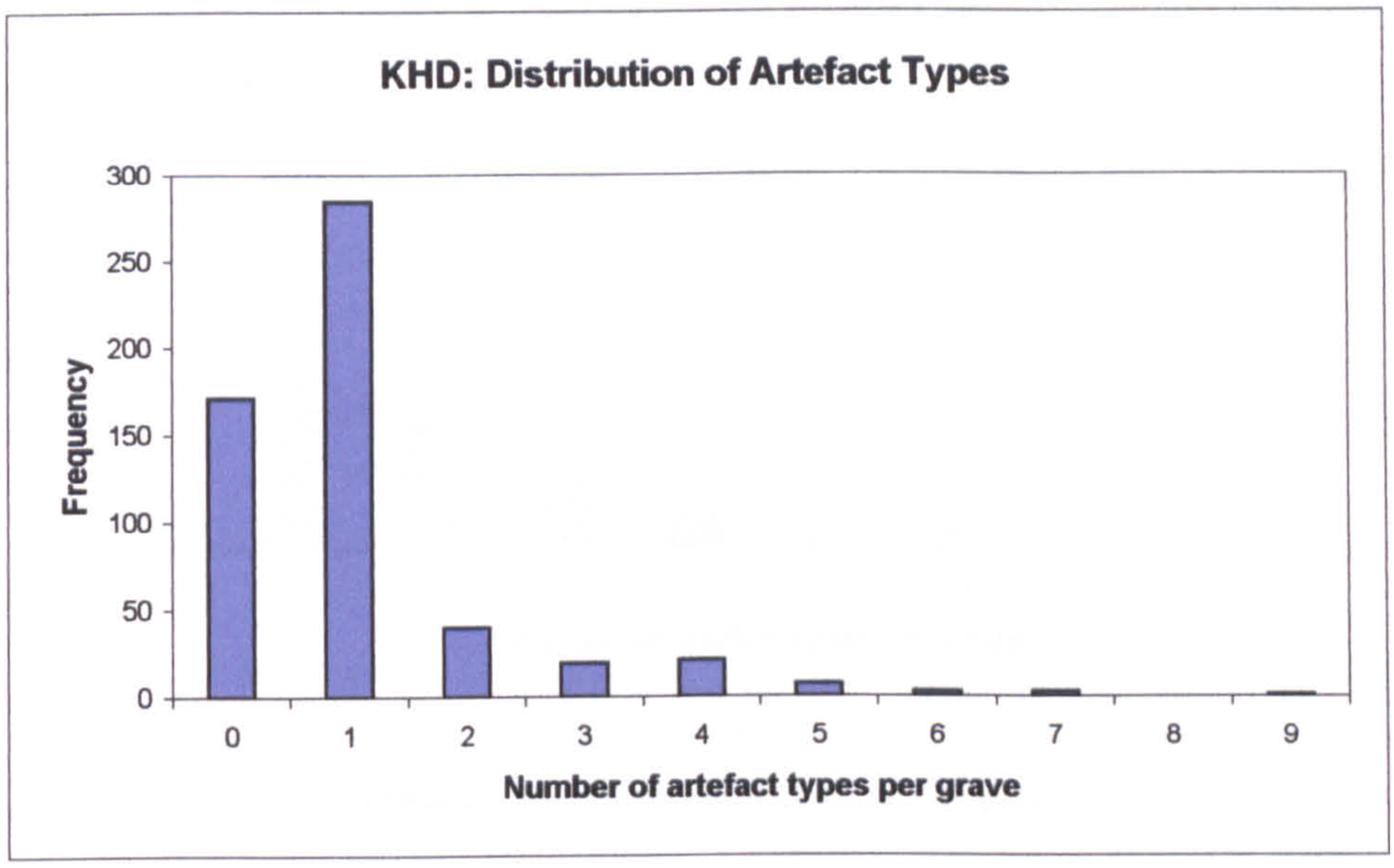


Figure 6.27: MAO Frequency Distribution of Non-Ceramic Artefact Types



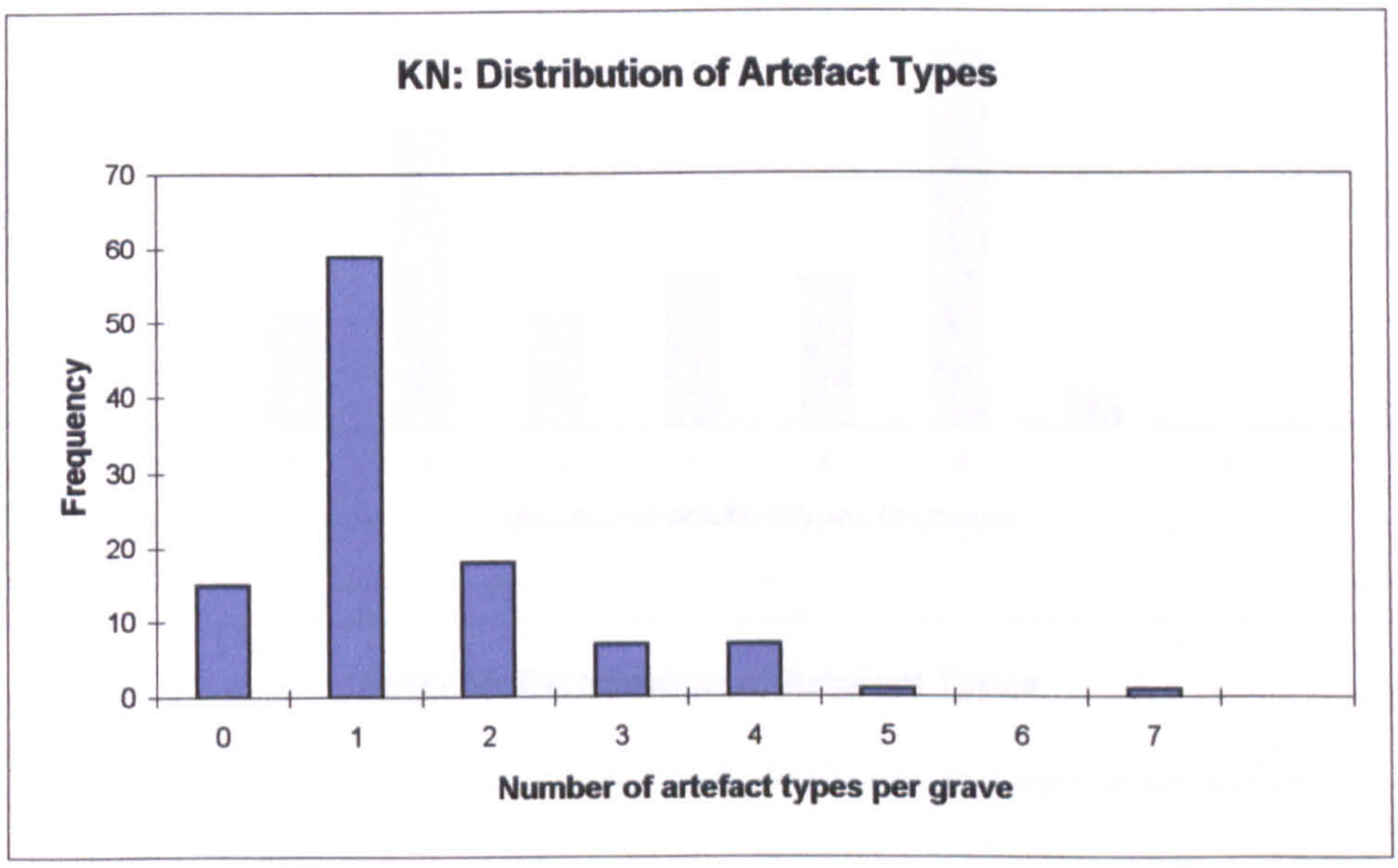
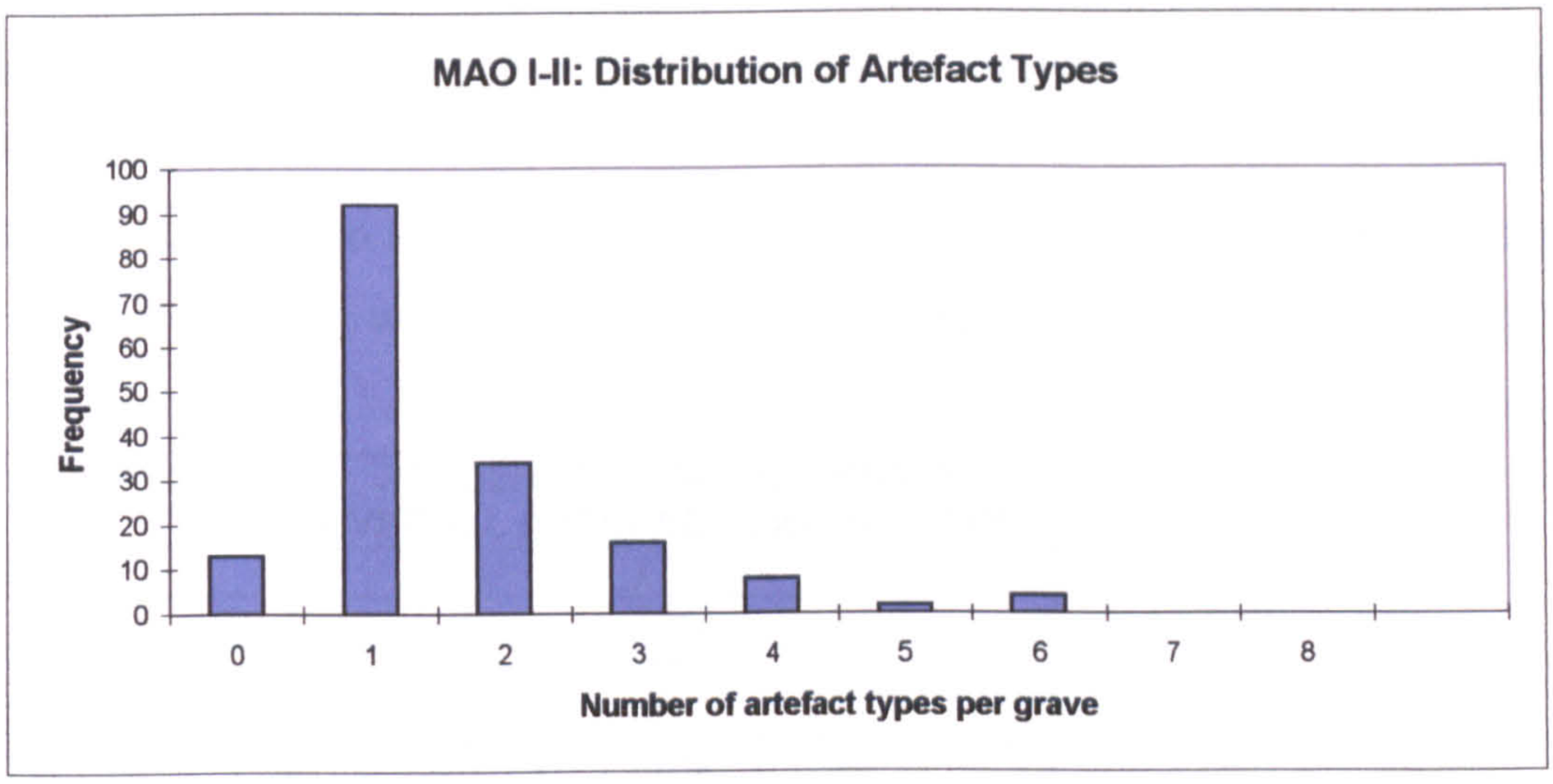
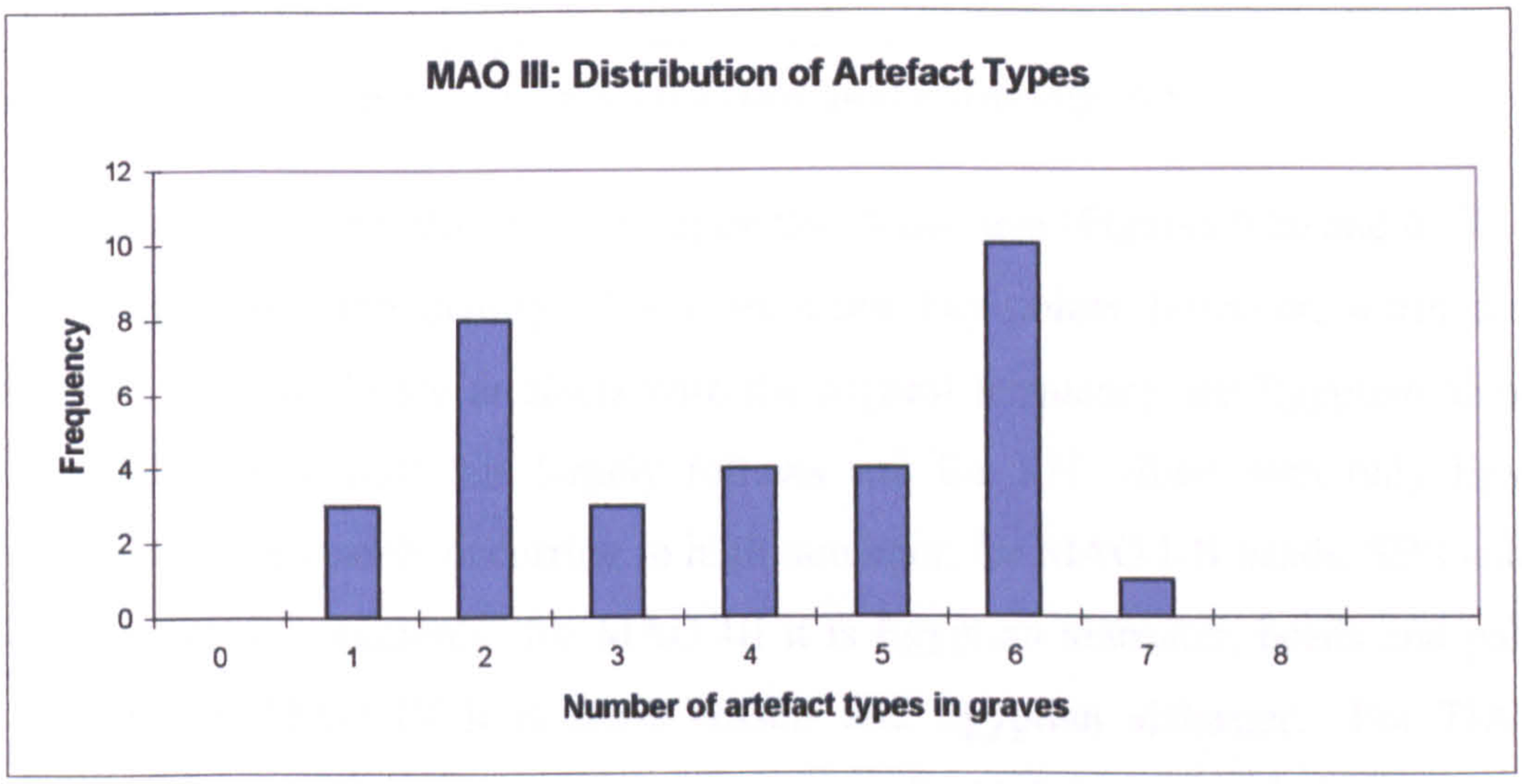


Figure 6.28: KHD and KN Frequency Distribution of Artefact Types





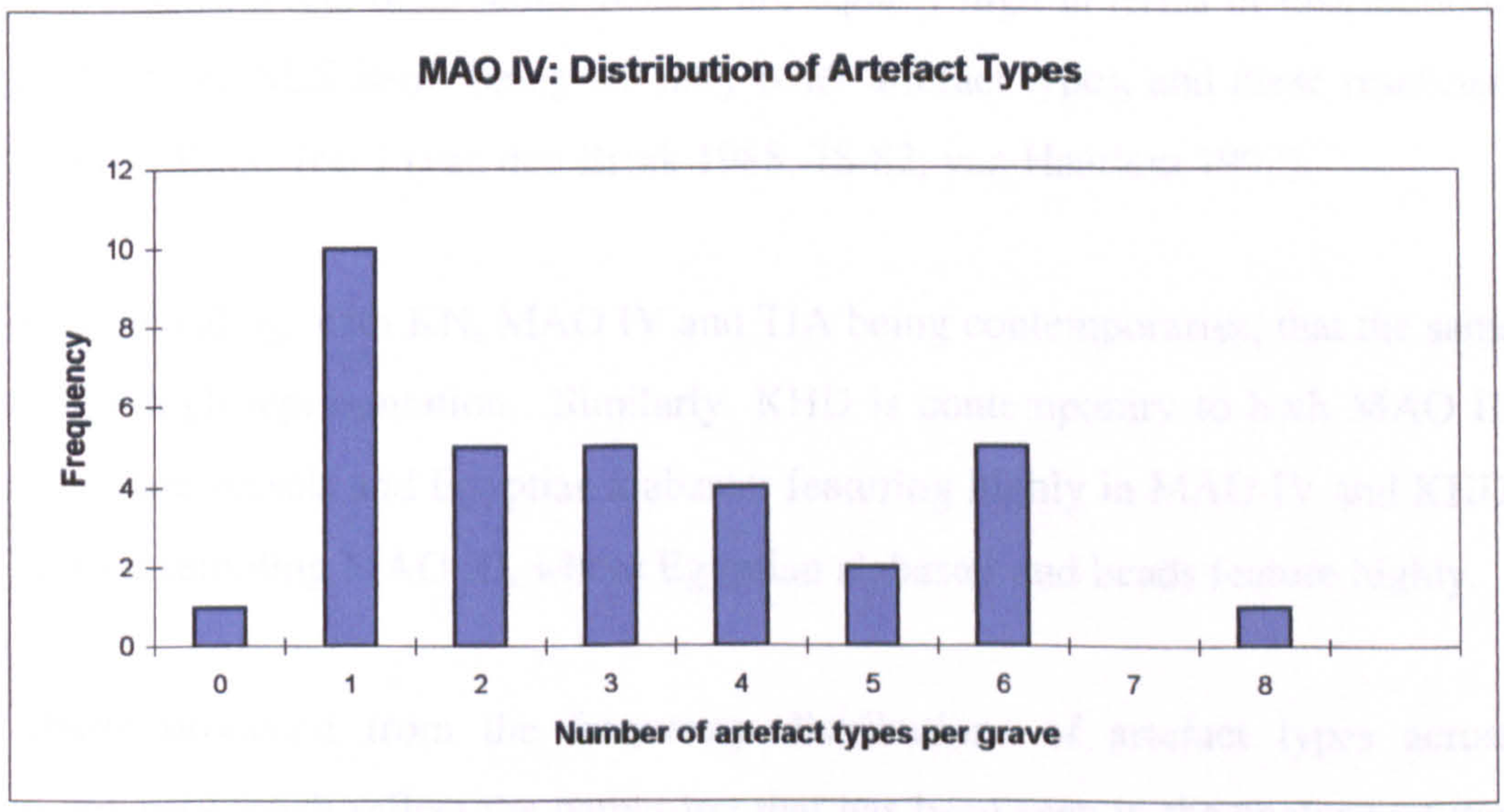


Figure 6.29: MAO Frequency Distribution of Artefact Types

Frequency Distribution of Artefact Types

Figures 6.26 and 6.27 show the distribution of different types of artefacts across the site, omitting pottery, since at every site this is the dominant artefact type. By omitting this variable it is clearer to see the distribution of other types of goods. For information, the percentages of pottery within the grave good assemblages are as follows:

SITE	PERCENTAGE OF POTTERY IN OVERALL ARTEFACT DISTRIBUTION
KHD	77%
KN	78%
MAO I-II	70%
MAO III	66%
MAO IV	55%
TIA	62%

Table 6.9: Distribution of pottery in the overall grave good assemblage (%)

It is only necessary to briefly comment upon the charts here (Figures 6.26 and 6.27), since they are largely self-explanatory. There are a few key points, however, worth drawing attention to. For KHD the artefacts with the highest frequency are Egyptian alabaster, stone vessels, and beads; this largely follows suit for KN, albeit with only Egyptian alabaster and stone vessels occurring in high numbers; for MAO I-II beads, SBS and flint blades occur most commonly; for MAO III it is Egyptian alabaster, beads and palettes; and, finally, for MAO IV it is stone vessels and Egyptian alabaster. For TIA both Egyptian alabaster and other stone vessels are equally high in terms of distribution, with copper, flint and SBS items being the only other artefact types, and these restricted to a single grave, B200/160 1 (van den Brink 1988, 78-82; van Haarlem 1993).

It is quite revealing, with KN, MAO IV and TIA being contemporaries, that the same two types have high representation. Similarly, KHD is contemporary to both MAO III and IV, with stone vessels and Egyptian alabaster featuring highly in MAO IV and KHD, and KHD also resembling MAO III, where Egyptian alabaster and beads feature highly.

The charts produced from the frequency distributions of artefact types across the cemeteries very much reflect the patterning that has been seen in the analysis of the total goods within graves at these sites. These charts are shown in Figures 6.28 and 6.29. For

KHD, the pattern follows with great similarity the distribution of total goods within graves, although the increase in the number of types does not always correlate with the increase in number of total goods. Within the KN population the artefact type distribution is reflective of the total goods, however, whereas in the total goods chart it was noted that there was less variation in comparison to KHD in graves with over ten total goods, this does not hold up in the artefact types' distribution. The distribution of number of types, for both KHD and KN, follows a purely downward curve from one type, with a low proportion of graves containing high numbers of types.

In the case of MAO, the charts also show comparison to the distribution of total goods. The MAO I-II pattern follows the same sloping curve as for the total goods; the MAO III types chart echoes the total goods in that it shows two peaks; whereas in MAO IV the distance between the peaks is more widely spaced, showing greater variation. Within Section 6.2.4 of the analysis carried out using *Excel*, the relationship between the total goods and number of types will be explored further as part of the bivariate analysis between the wealth of the grave and the effort and acquired/inherited status. This analysis will help to determine whether these two aspects of wealth are comparable and whether the results of their individual comparison with effort and ascribed status display consistent similarities or otherwise.

Frequency Distribution of Grave Type

Frequency distribution analysis is carried out on the grave size (see Section 6.2.4), and here I discuss the types of graves represented at each of the sites. A complete list of variables possible for grave types has already been given in Section 4.1.2, so here only the more frequently occurring types will be referred to directly. It should be noted that the variety of types of graves is far from being consistent between the sites under investigation. There is not a great deal that can be said concerning the superstructure of the graves, although in some cases, for example the large tomb 970 at KHD, a mixture of sand, silt and gravel was in evidence 'heaped to construct mounds over the interments' (Hassan 2000a, 38; cf. Wildung 1997, 25). Wildung (1984, 266) notes the lack of preservation for over-ground structures at MAO.

At KHD it is clear that oval grave pits are most commonplace, followed by rectangular graves (373 of the former, to 136 of the latter), with a distribution of 15 and below for square, circular, and mud-filled graves, and pottery coffins (both round and oval in shape) (Figures 6.78-6.79). At KN, the picture is remarkably different, with a much more even division between the three main categories of grave type represented, each group with between 30 and 36 graves. These three categories are: coffin burials, jar burials, and mud-brick lined pits with pottery coffins (Figure 6.81). The only other grave types attested from the recording sheets are graves containing mud-brick (but without a coffin), and chambered graves, of which there are nine and two respectively.

The three phases of the MAO cemetery show some clear differences as well. At MAO, the main grave types are given as (with original nomenclature in parentheses): jar burials (Gefässbestattungen), sandpit burials (Sandgräber), pits with remains of matting (Mattengräber), mud-lined graves (Lehmgräber), and mud-brick (chambered) graves (Kammergräber) (Kroeper and Wildung 1985, 25-37; Figures 6.80, 6.83). It is noted that the more modest tombs are only shallow, whereas the richest ones are found at a depth of over 2m (Leclant 1980, 357). During MAO I-II, the majority of graves that have been noted within the published site reports have no discernible burial pit (Kroeper and Wildung 1994; 2000). This unfortunately accounts for 76% of the graves in this phase, however, the remaining graves are distributed between jar burials, contracted burials with matting/cloth remains, irregularly shaped/trapezoid graves, mud and matting, and mud-lined graves (Leclant 1980, 356-357; Kroeper and Wildung 1994; 2000). By MAO III, the picture has changed somewhat, with the highest frequency of graves belonging to the categories of rectangular graves, oval graves, burials with remains of matting/cloth, and those with no discernible pit. The other types of grave represented are oval graves, coffin burials, jar burials, and irregular pit burials. Finally, during the MAO IV phase we witness a fairly even distribution between rectangular graves, those with no discernible pit, and chambered graves, the latter being the 'elite' tombs (Kroeper 1992). In addition, there are oval graves, jar burials, coffin burials, burials with matting/cloth remains, trapezoid burials, and burials with mud and matting remains.

At TIA, the very limited data nonetheless provide evidence for a number of different types of tomb. There are rectangular graves 'of fairly modest size', with three additional chambers for the storage of grave goods (Grave B200/160 3); 'deep-reaching pit burials' described as being of 'considerable size', which are covered with reed matting (Grave B200/160 number 1); and also a tomb with continuous courses of mud-brick both between the chambers (four including the main burial chamber) and for the main tomb walls, it is a tomb of even greater proportions than the aforementioned (Grave B200/170 1) (van den Brink 1992a, 50-51; van Haarlem 1993). Van den Brink (1992a, 51) notes that the construction of grave B210/160 1 was very similar, in terms of technique, to the Early Dynastic graves of the 'elite' at MAO. The grave at TIA was constructed with mud-brick walls 'only at certain intervals' with the main purpose of keeping the lining mats of reed, which were supported with wood, in position (van den Brink 1992a, 51).

One striking difference between KHD and the other sites is the complete absence of mud-brick chambered graves. This is the only cemetery being investigated where these chambered graves, have not as yet been found. Furthermore, it is highly unlikely that they will be found since the southern (and latest period in the early cemetery) extent of the cemetery has probably already been reached, with test-pitting further to the south unrevealing. It is here, in the south, that these grave types are more likely to be found.

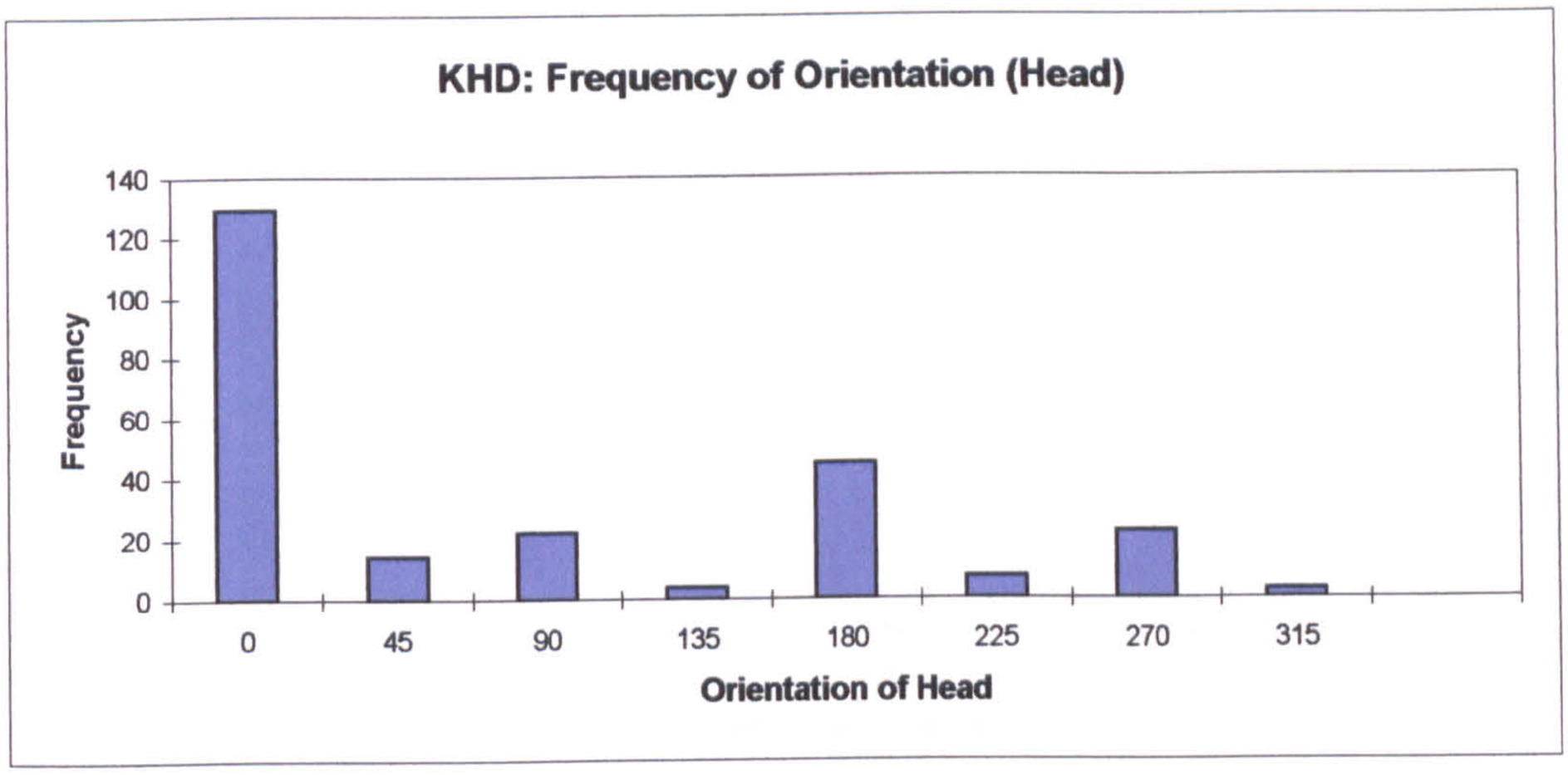
In addition, the difference in coffin types between KHD and KN is striking since the KHD coffins are consistently either round or oval in shape, whereas those from KN are overwhelmingly rectangular ceramic coffins, although with some variation to the lids; the exceptions being grave 71 noted as oval and grave 73, possibly containing wooden coffin remains (Figures 6.78, 6.81). There are also remains of wooden coffins noted at MAO. Pragmatically the coffin may be seen as protection against the earth, or as noted by Wilkinson (1994, 25) since the later Egyptian word for house and tomb is the same, they may also be considered as 'a symbolic tomb and "house"' for the deceased'. Along the same lines, Spencer (1993, 36-37) points to the increase in rectangular tombs during Naqada II in Upper Egypt, which he suggests may be related to 'the adoption of rectangular brick-built houses'. Alternatively, Hassan and Smith (2002, 63) view the tomb as a 'womb' into which the body was placed in flexed or foetal position, ready for

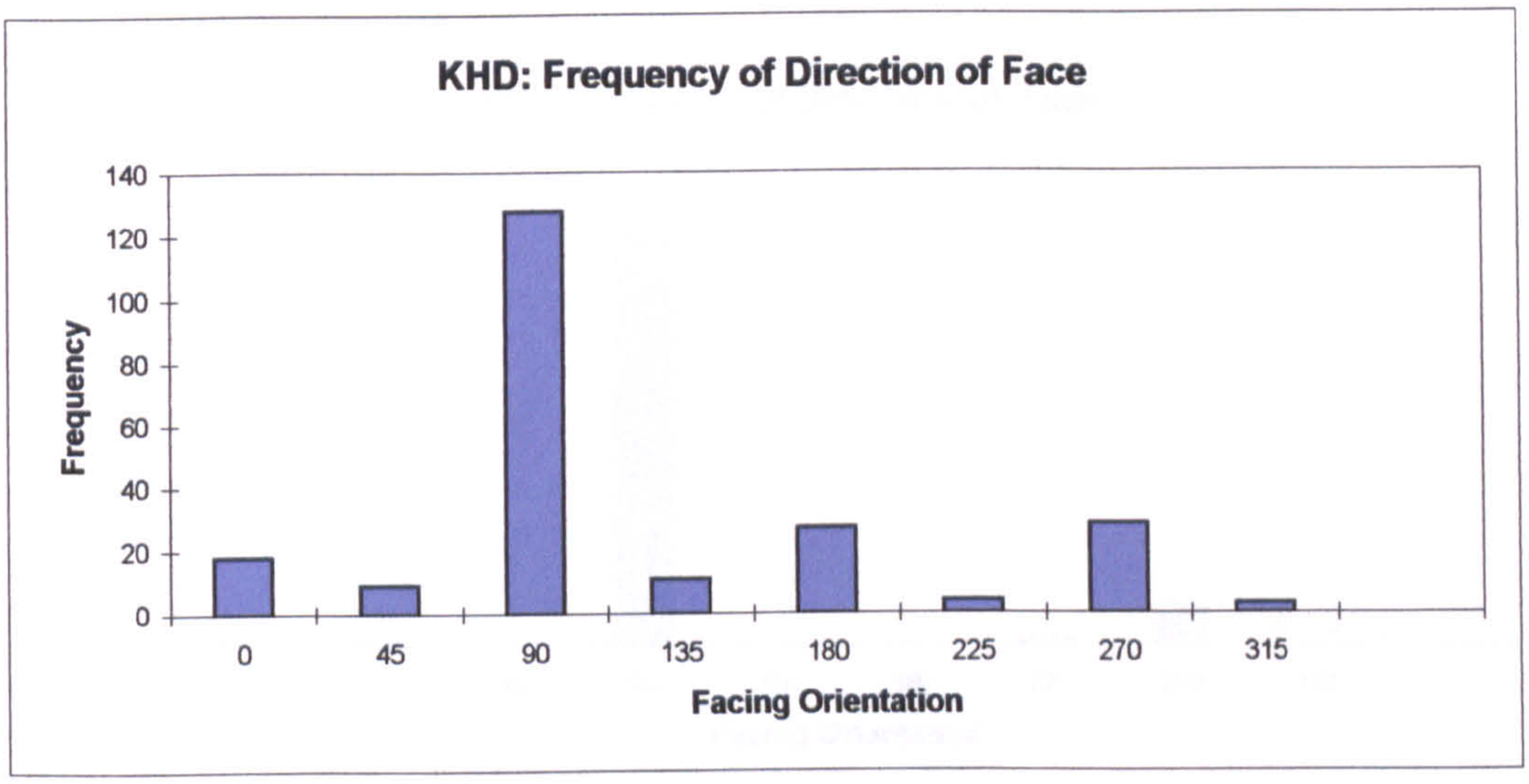
rebirth. Interestingly, Quirke (1992, 143) considers the prime importance of coffins as twofold: both as a show of status, and as a sound means of protecting the dead. Below, in discussion of the bivariate analysis, tomb size will be discussed in relation to wealth and acquired/ inherited status.

Frequency of Body Position

There are three variables related to the position of the body: the orientation/direction of the head, the direction in which the deceased is facing, and the side on which the deceased is laid. It is also noted if the burial is supine, whether there is only fragmentary evidence of human skeletal remains, or whether there is evidence for disarticulated skeletal remains.

According to Carr (1995, 157), the positioning of the body is likely to be reflective of philosophical-religious factors, rather than inform regarding social organisation. The following discussion will, therefore, look to the degree of variation and cohesion between the cemetery sites, and to possible factors of influence and change (see Section 5.3.1). To recap upon the discussion of burial orientation, it can be seen that throughout Egypt right up until Dynasty III the most popular burial position in Upper Egypt was head south with the face to the west, and with the body in a flexed position (Castillos 1982, 174; Debono and Mortenson 1988, 46). Of a group of cemeteries in the Badari region, Castillos (1982, 101) notes that: 'It is in these later ("Protodynastic") cemeteries that the switch from west-facing orientation to east-facing orientation becomes apparent in a rather surprising way, after a trend in the opposite direction over most of the Predynastic period in this area'. The flexed position is common throughout Egypt during the Predynastic and Early Dynastic periods (Debono and Mortenson 1988, 45).





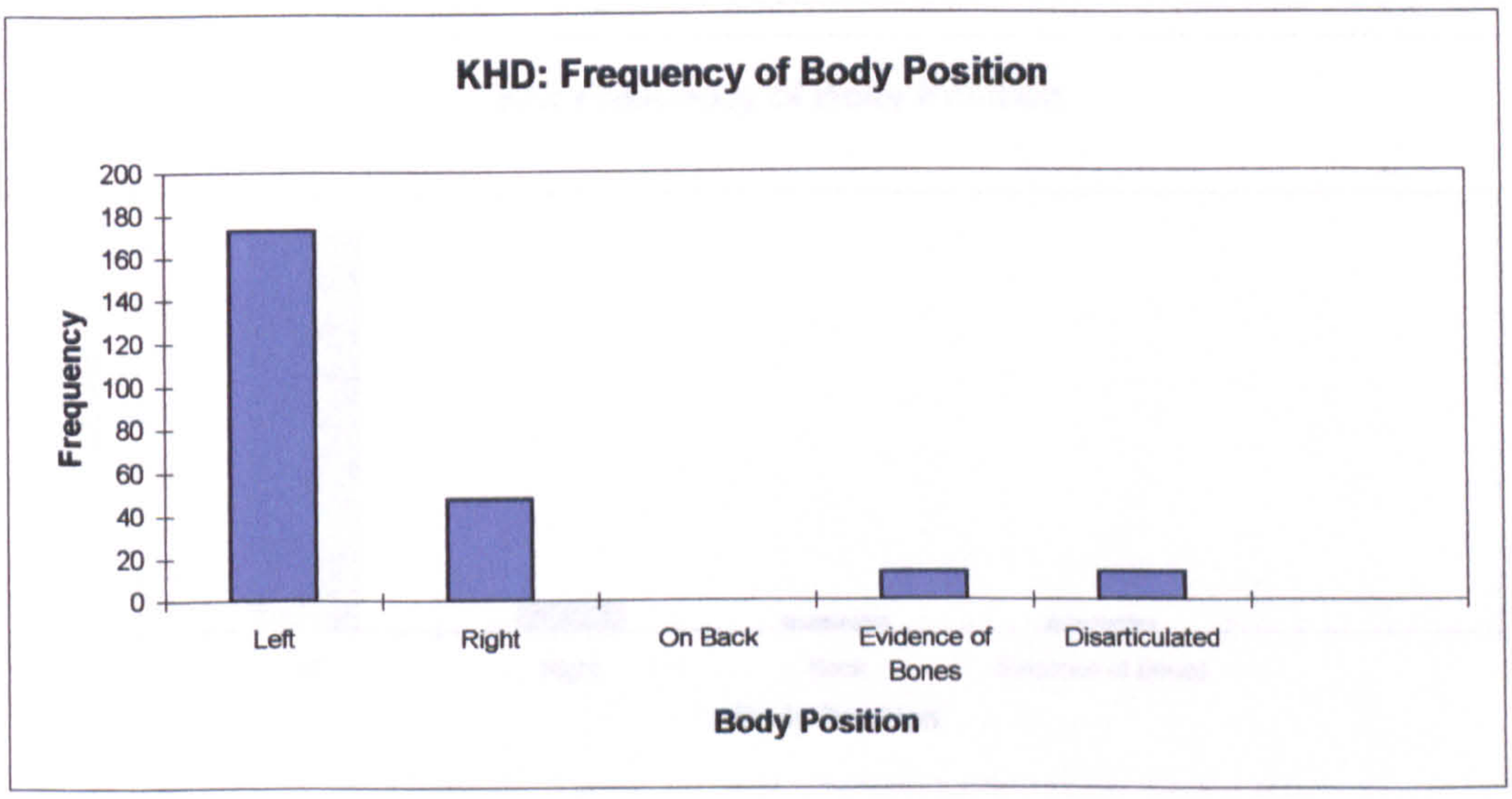
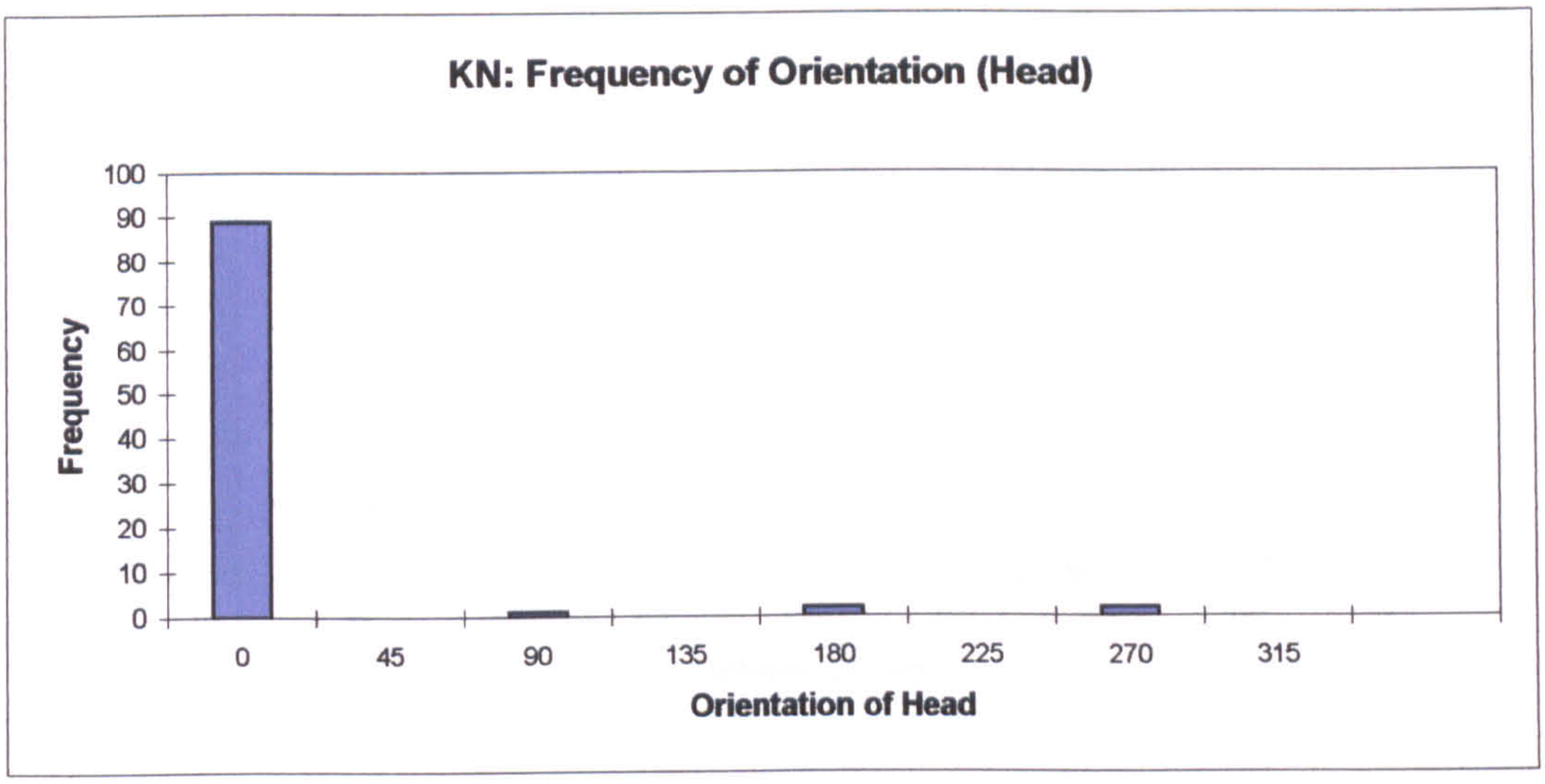
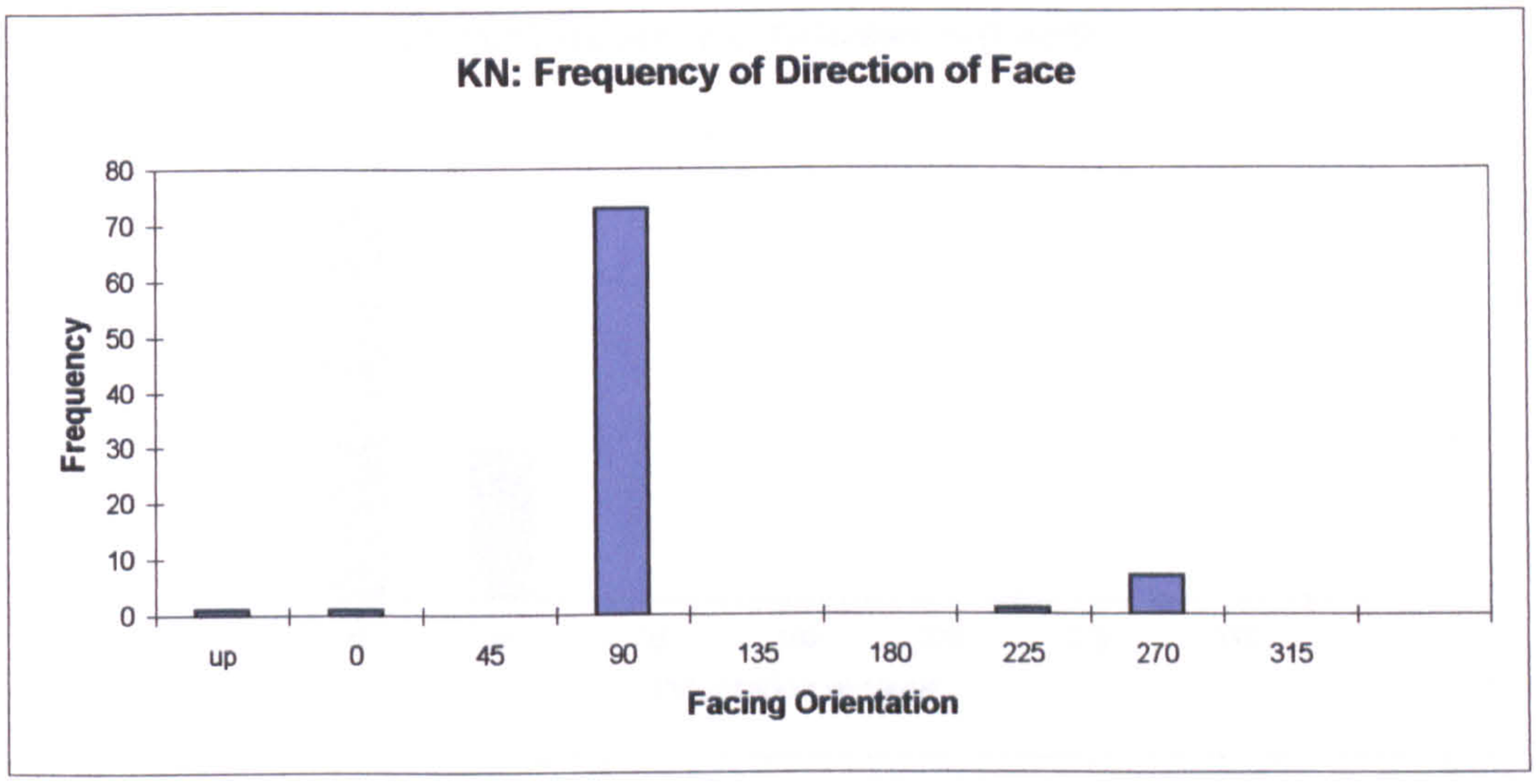


Figure 6.30: KHD Frequency of Orientation





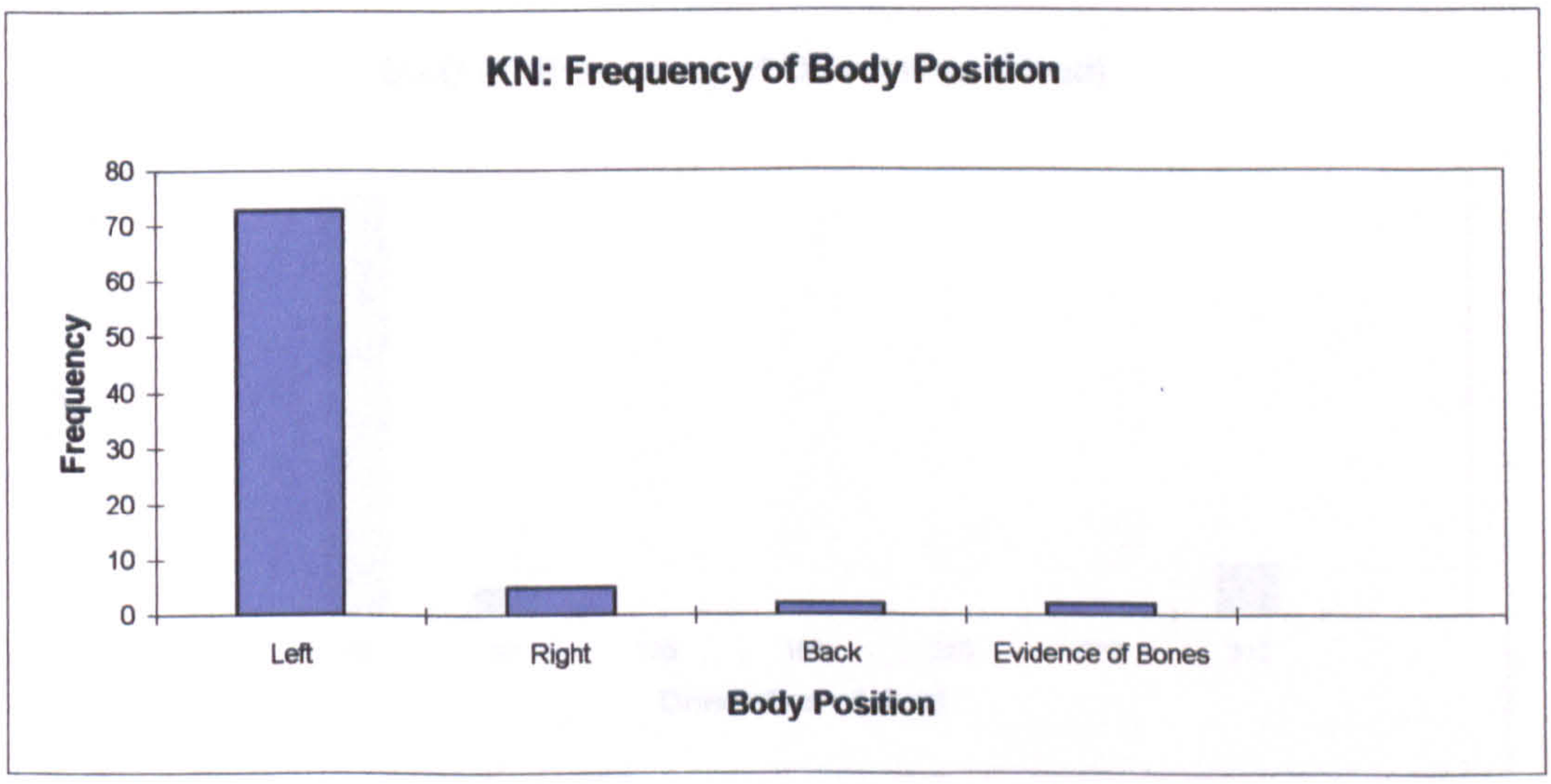
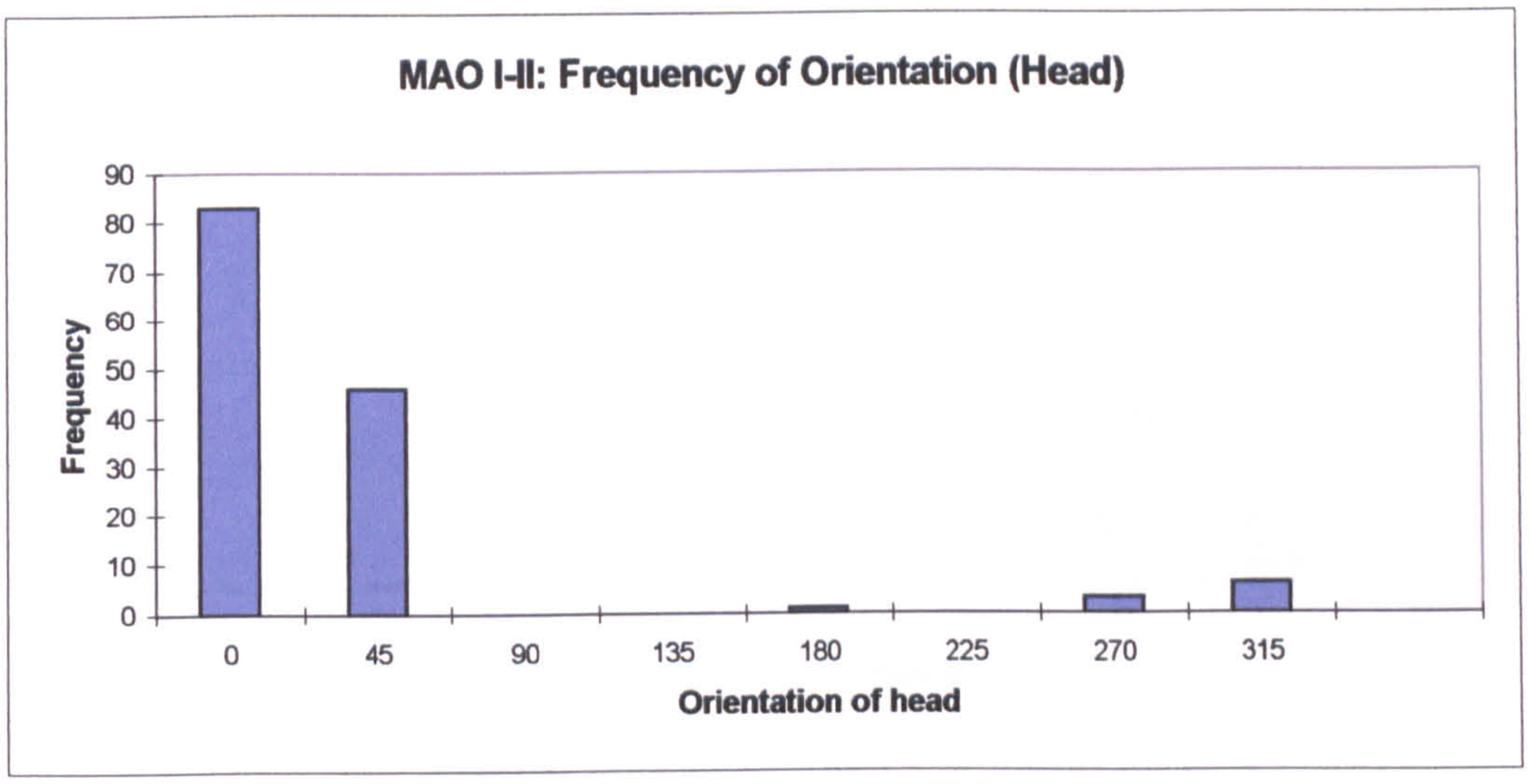
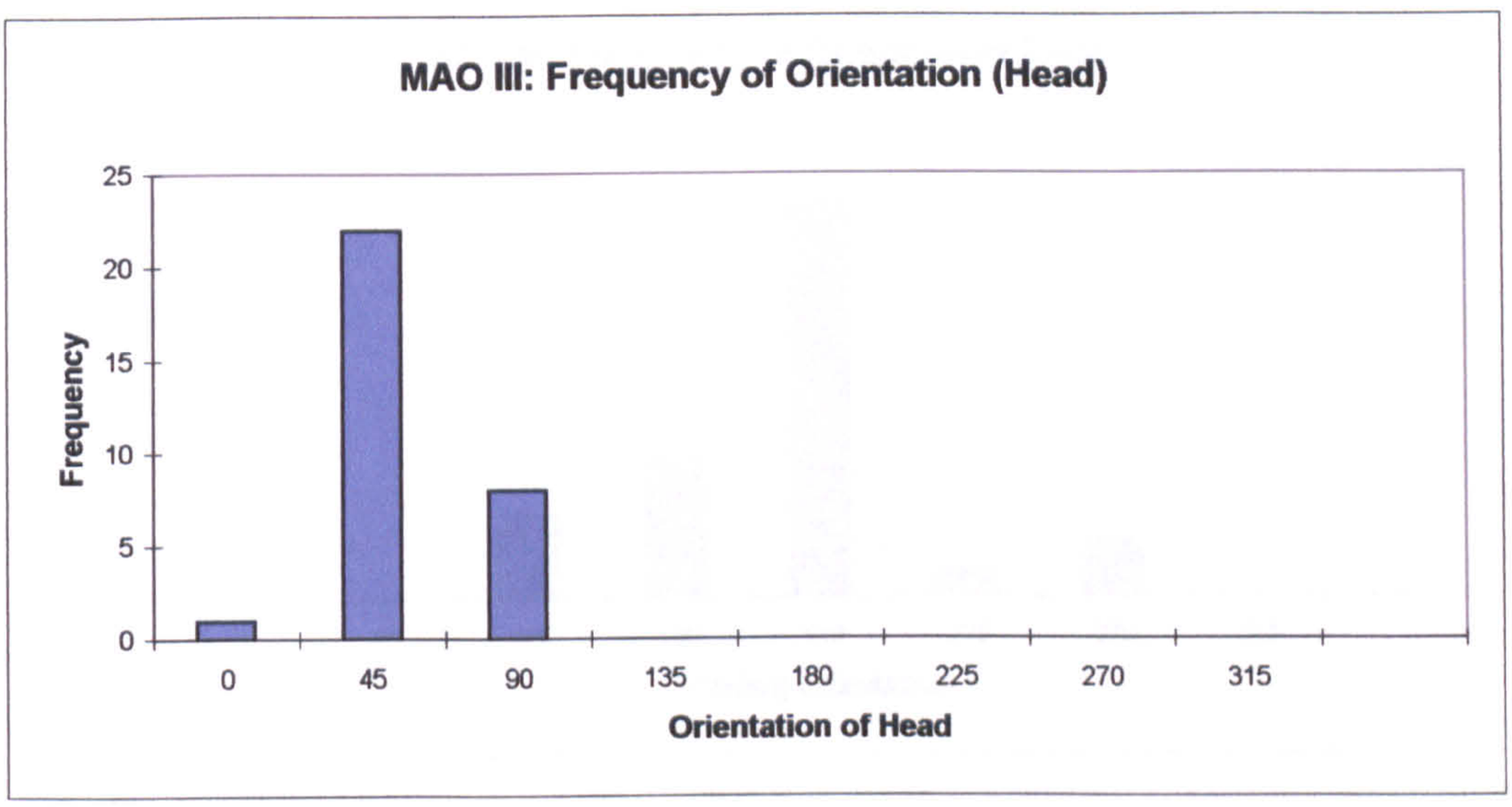


Figure 6.31: KN Frequency of Orientation





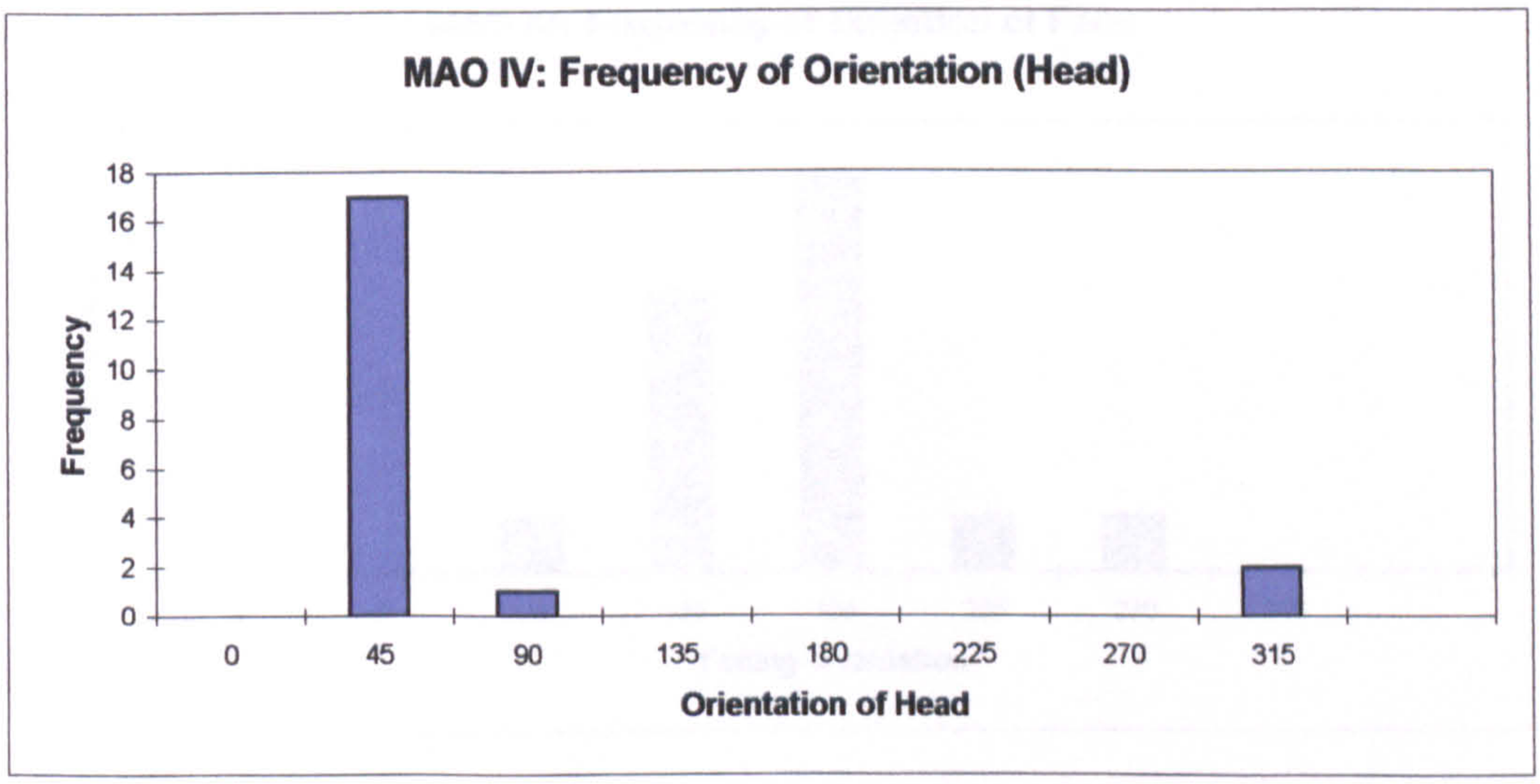
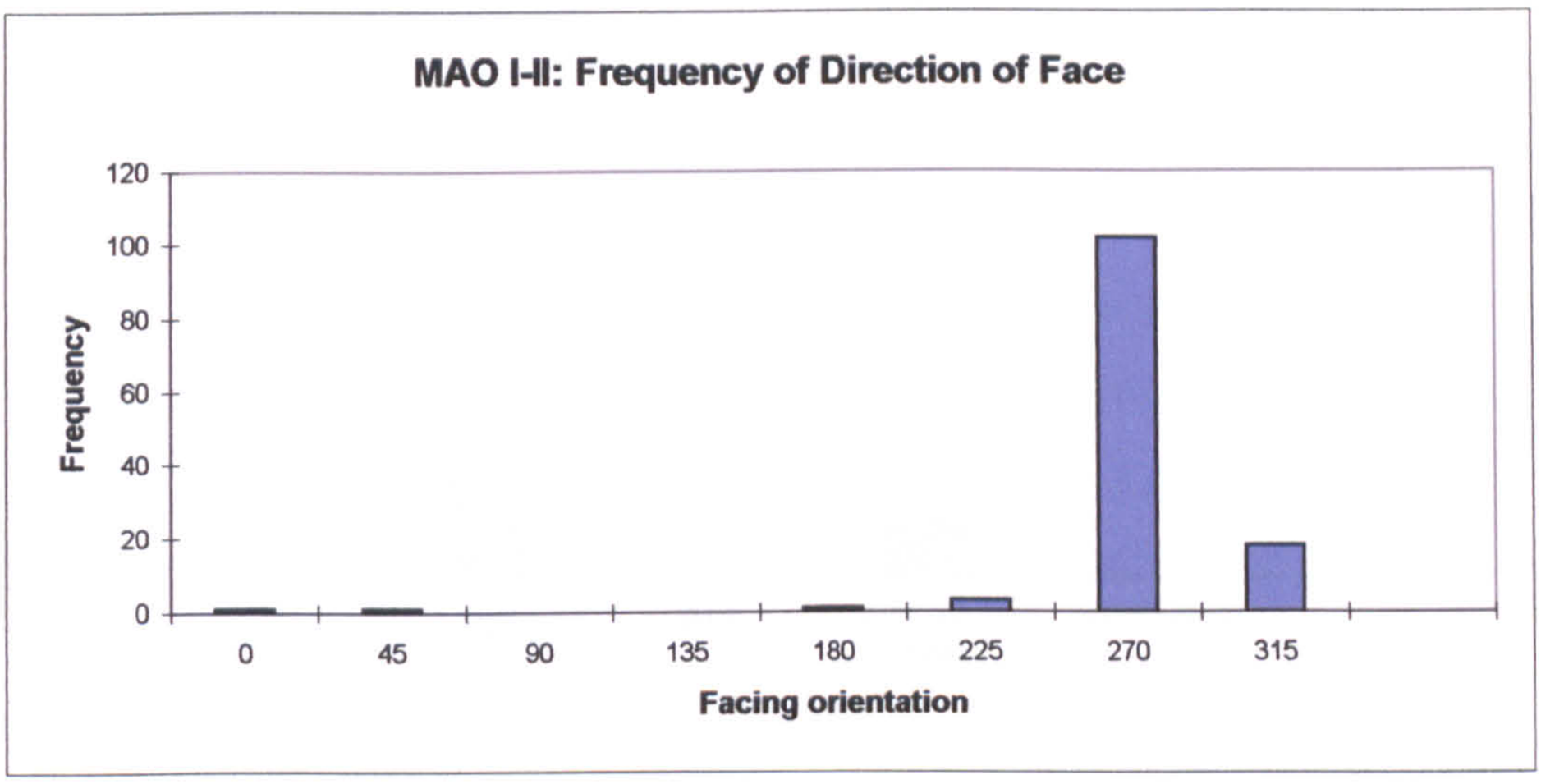
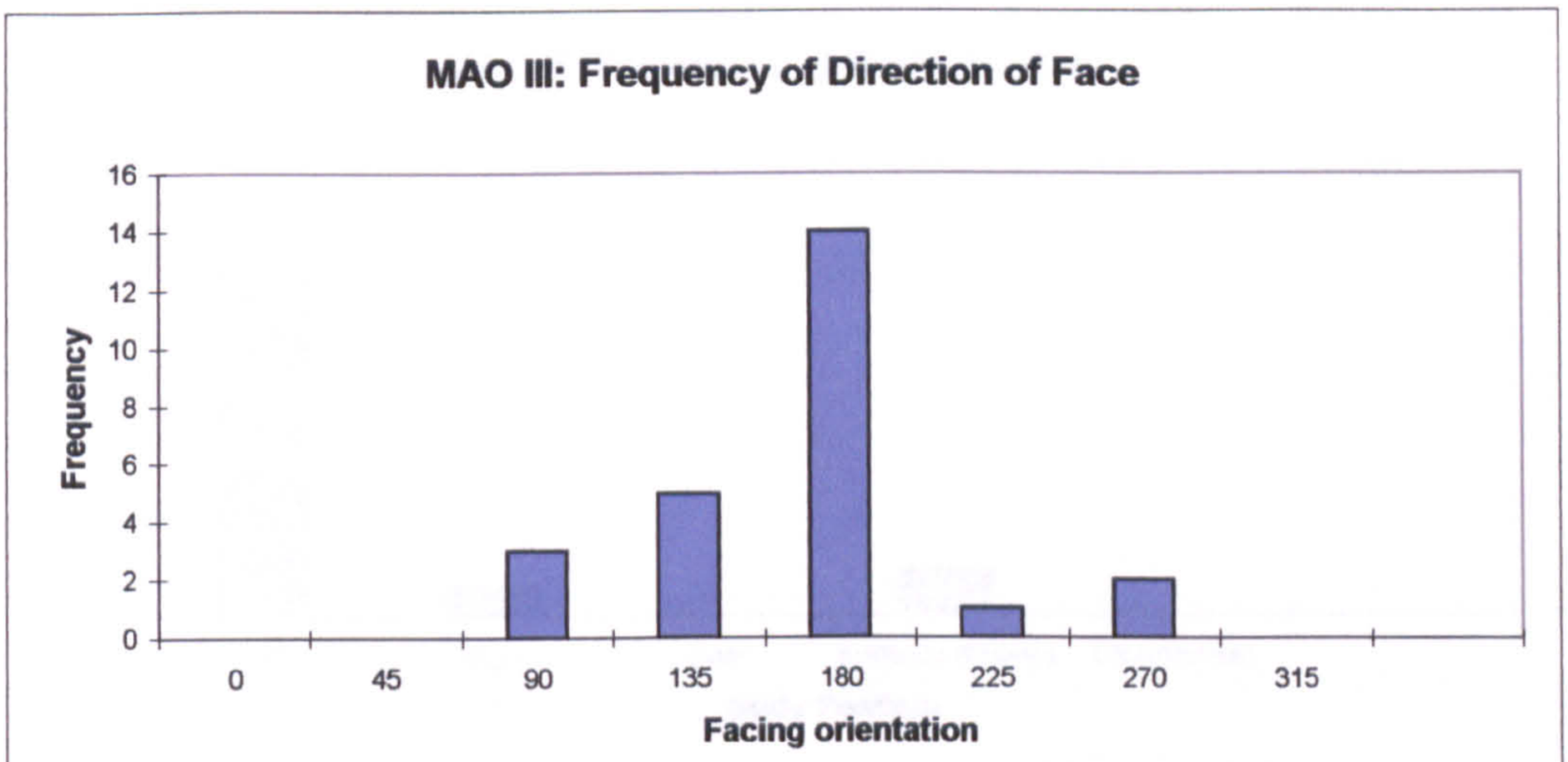


Figure 6.32: MAO Frequency of Orientation (Head)





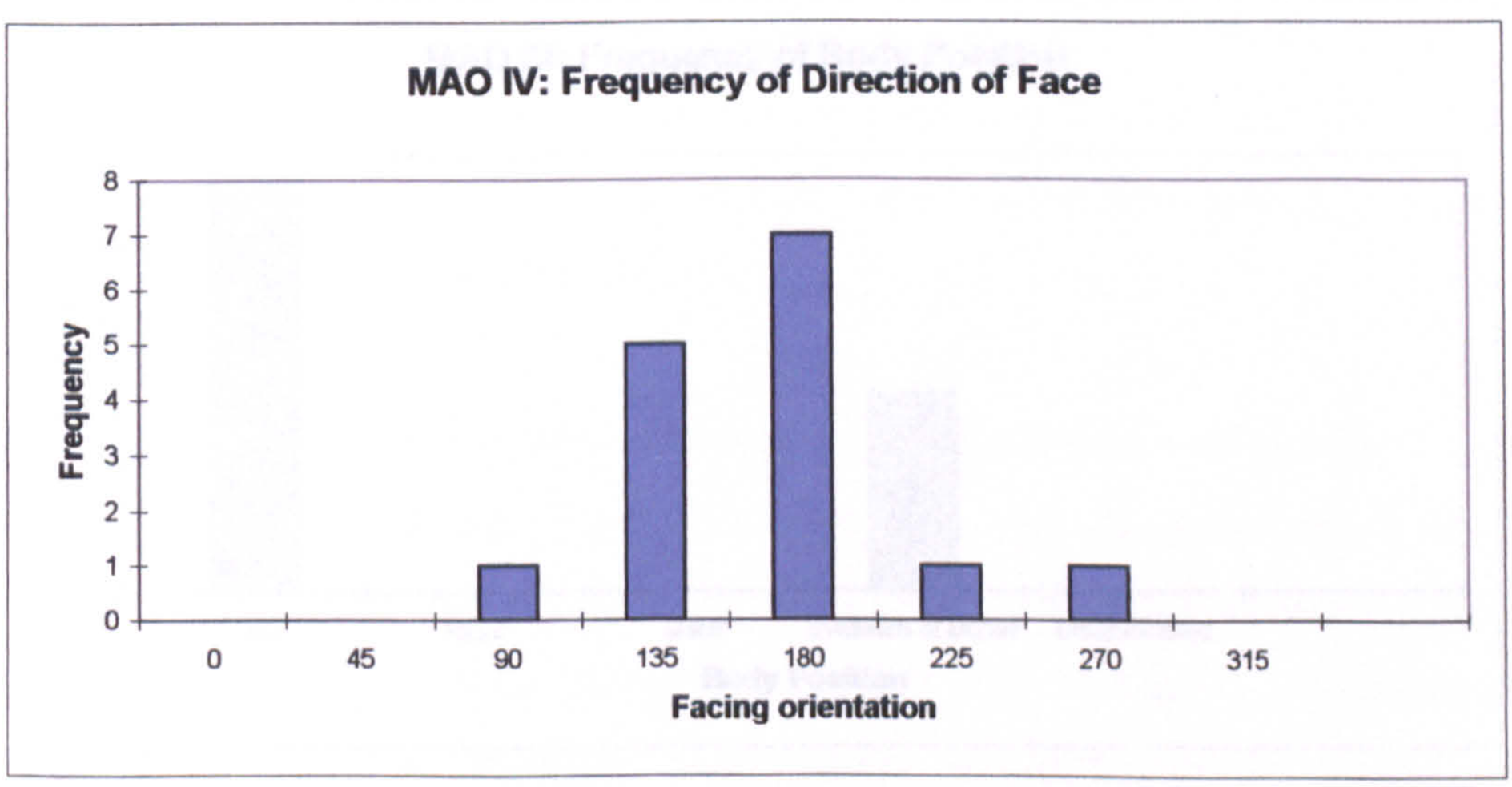
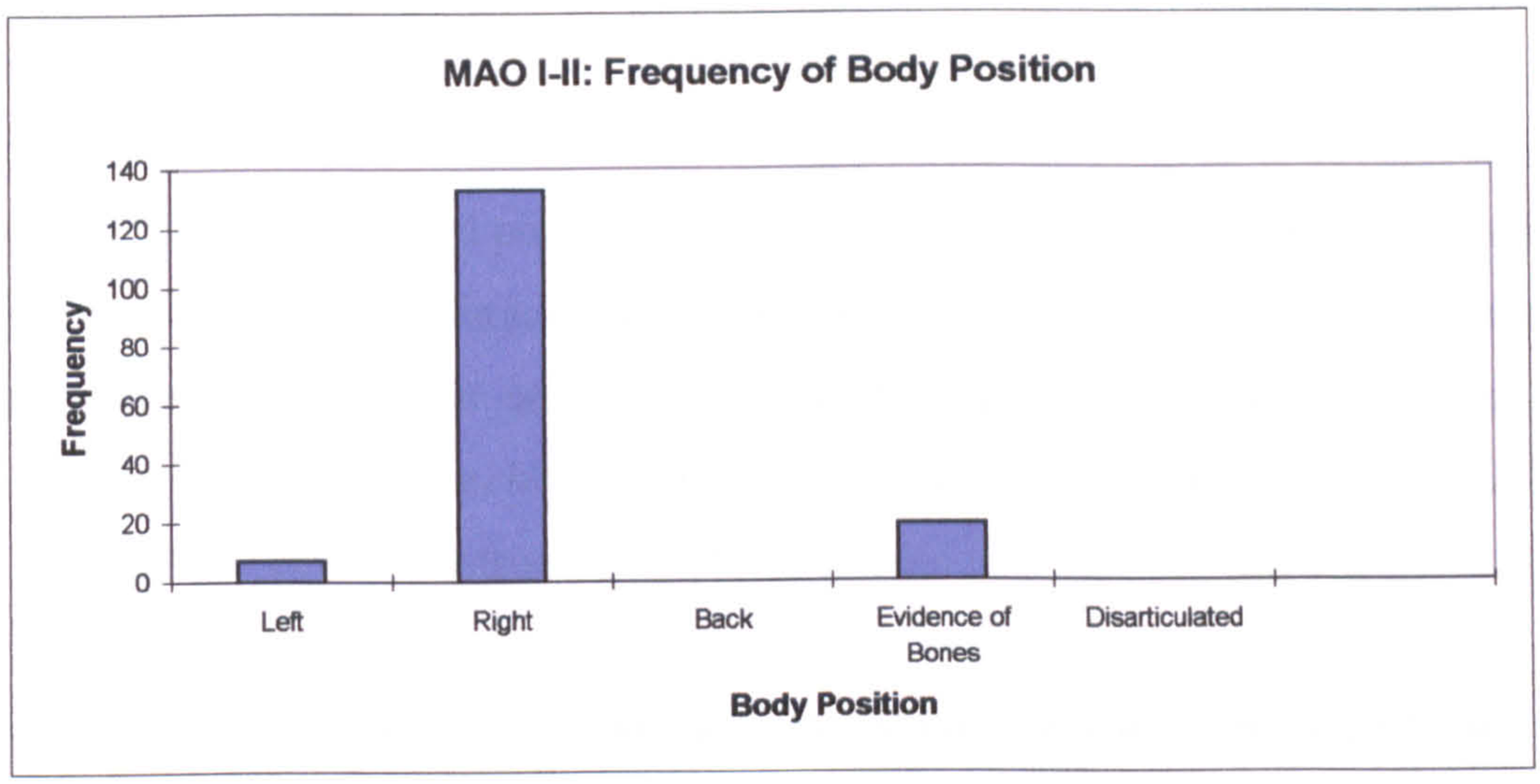
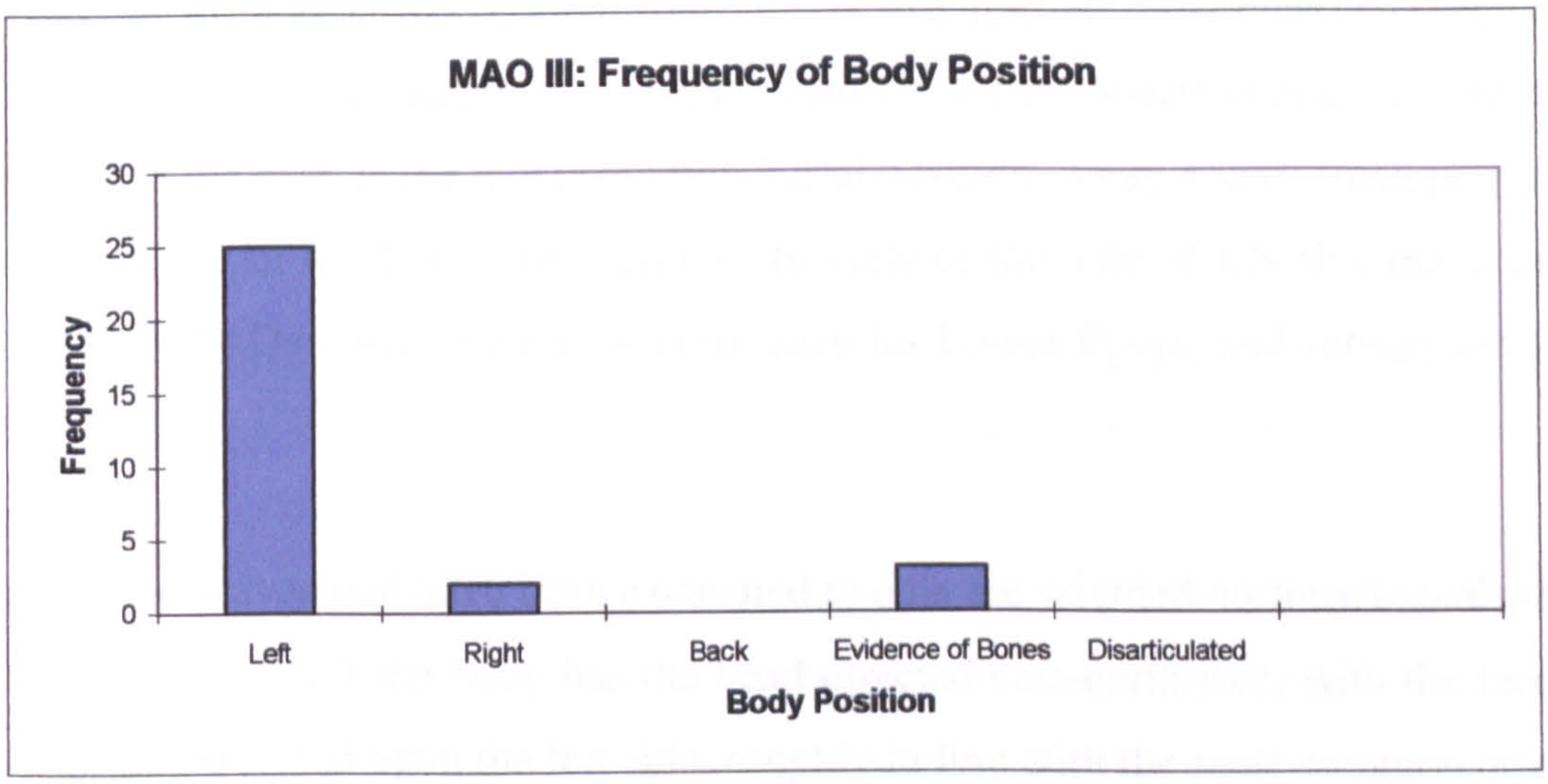


Figure 6.33: MAO Frequency of Orientation (Face)





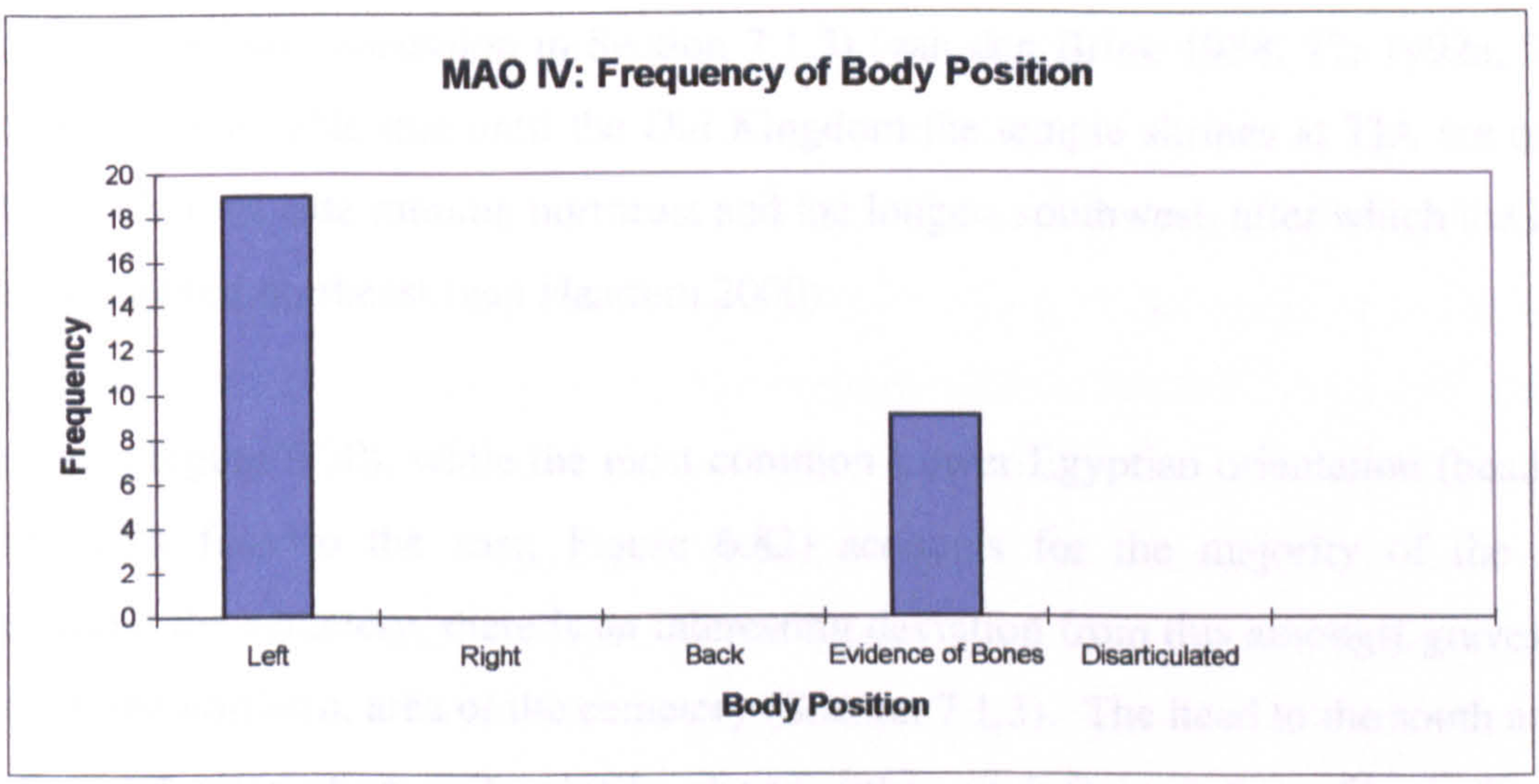


Figure 6.34: MAO Frequency of Body Position

From the Naqada II period onwards there were, however, an increasing number of exceptions to what are described as the 'rules' of Upper Egyptian orientation (Midant-Reynes 2000, 187). However, in Lower Egypt from the Naqada II through III periods, and onwards, the favoured position was for head north with face to the east (Debono and Mortenson 1988, 46), again in a flexed position. What is also in evidence is that in Lower Egypt, more so than in the south, there is greater variation in orientation before Naqada II-III, and it will, therefore, be important to see whether this is apparent at KHD, KN and MAO (Debono and Mortenson 1988, 46).

The results of this analysis are really quite interesting since it is only the KN data that act exactly as we might expect them to. This is exemplified most clearly in Figure 6.31. Virtually all of the orientations provided with the record sheets concur that head north, and face to the east, is the most common burial position. Only a very small proportion of the graves are of a different orientation. In view of the date of KN this fits in perfectly with the Early Dynastic orientation preference for Lower Egypt, and subsequently Upper Egypt.

At TIA, the graves that have been excavated to date are oriented northeast-southwest, and in grave B200/160 1 the body has the head directed east-north-east, with the face to the southeast, and rested upon the left side, roughly in line with the most common orientation of this period (see discussion in Section 7.1.3) (van den Brink 1988, 77; 1992a, 50). In addition, it is notable that until the Old Kingdom the temple shrines at TIA are oriented with the shortest side running northeast and the longest southwest, after which the longest wall is oriented northeast (van Haarlem 2000).

At KHD (Figure 6.30), while the most common Lower Egyptian orientation (head to the north, with face to the east; Figure 6.82) accounts for the majority of the burials throughout the cemetery, there is an interesting deviation from this amongst graves in the earliest, the northern, area of the cemetery (Section 7.1.3). The head to the south and face to the west orientation quite clearly shows either an influence from Upper Egypt, or ideological differences of another source. While it is stated above that by the Naqada II and III periods the most common orientation in the north became head to the north and

face to the east, variation might simply be explained by increasing inter-community contact, and the ideological preferences of certain kin groups (contra O'Shea 1981, 49-50; see Section 7.1.3 for further discussion).

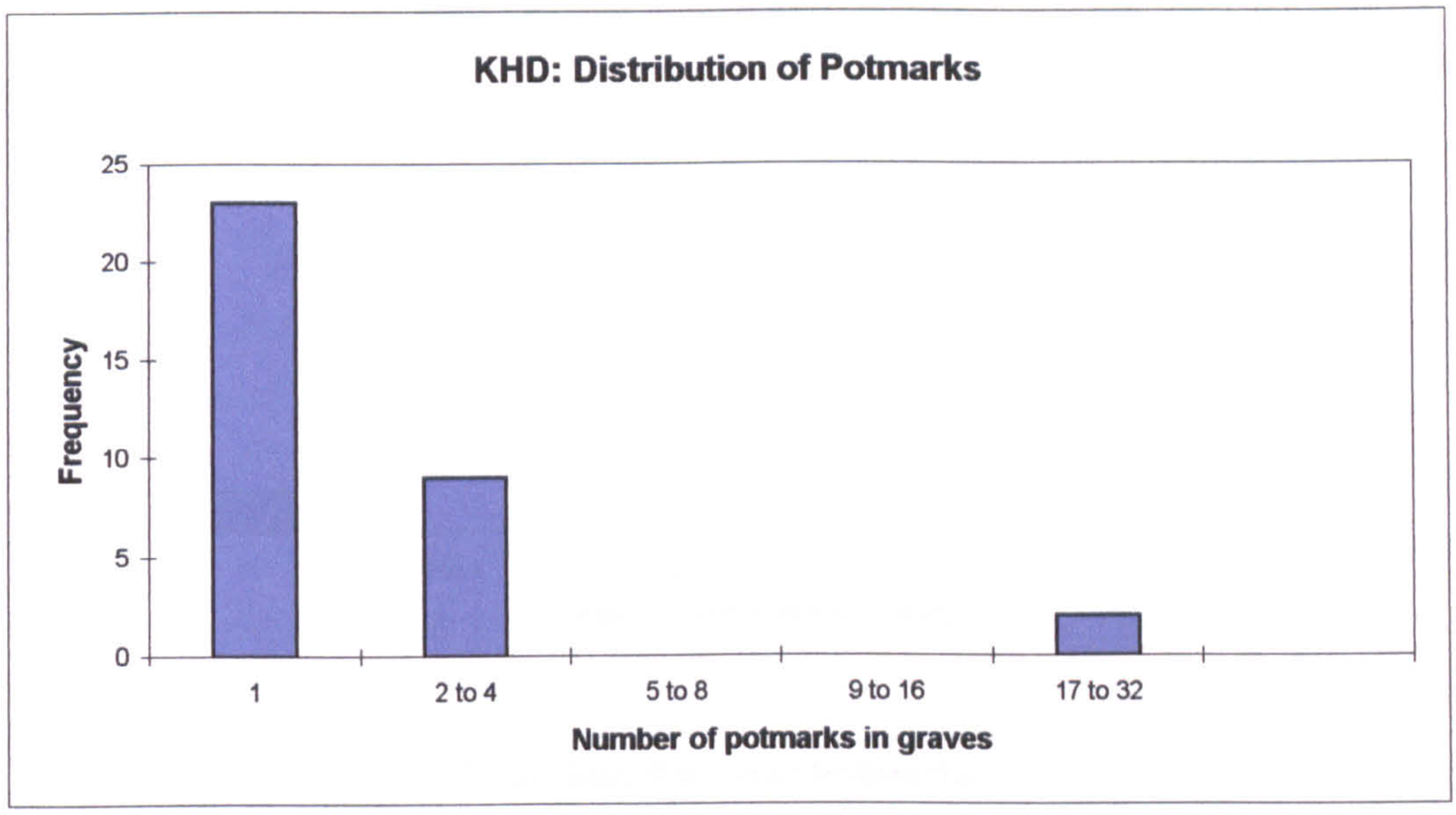
The pattern at MAO is quite clear-cut between the earliest and later two phases, which ties in well with the belief that a hiatus separates the earlier (MAO I-II) and later (MAO III and IV) cemeteries (van den Brink 1989, 79-80). In addition to a change in the orientation of the deceased, changes are apparent in terms of quantity and types of both ceramic and non-ceramic grave goods, and there have been no 'transitional' graves found to date (Kroeper 1987, 82). While the MAO I-II cemetery is chronologically earlier than the KHD cemetery, it also shows that the earliest population within the MAO community had some clear ideological differences to those expressed in the subsequent two phases (as indeed seems to be the case at KHD), be they a separate or an expanding population at the sites. Kroeper (1987, 82) cites 'a strongly differentiated social structure in the population, change in religious tradition, and additional influx of population at one time', or a mixture of these, as reasons for why we see such differences within the mortuary record between MAO I-II and MAO III-IV (van den Brink 1989, 79-80).

The earliest burials in each cemetery do show different orientations indeed, and while that at KHD can be inferred as having some relationship to the Upper Egyptian burial practices, it does not tally with the early *northern* tradition of head to the south and face to the east (Castillos 1982, 171-172; Debono and Mortenson 1988, 46). It may be inferred that the early MAO burials (Figures 6.32-6.34) are indicative of an ideology distinct from the later populations of the cemetery, but they definitely do not follow the Upper Egyptian trend of head to the south, rather head to the north and the face to the west, and lain on the opposite side (right) in the case of 60% of the burials (Kroeper and Wildung 1994; 2000; Figure 6.83). The face being positioned to the west may be symbolic of earlier beliefs concerning the resting place of the dead in the west. It is important to note the likelihood of burials not being oriented strictly on the cardinal points. We might, therefore, witness some variation to strict head north and face east patterns (see Section 7.1.3), and burials may also be orientated on a natural element of the landscape, which in the Nile Valley is invariably the river.

By MAO III, the pattern changes dramatically to the most commonly favoured orientation of head to the northeast and face to the south/southeast, with all but two burials positioned on the left side. A very similar pattern persists during MAO IV for the majority of burials. Kroeper (1987, 77) notes that these graves display a 'striking contrast to the earlier graves', because the body is now always lain on the left side, facing east or southeast, as opposed to the previous position of the right side, with head facing to the west.

As to why the deceased are positioned facing a certain direction, Allen (1995, 5) remarks upon the vanishing and reappearance of the sun, and how this 'suggested to the Egyptians a cycle of death and rebirth'. The 'feminine' nature of the sky is personified by the goddess Nut who faces to the west 'with her rear in the east' for the rebirth of the sun (Allen 1995, 5). Perceptions also seem to have varied as to where the world of the dead, or the entry into the world of the dead, was located but orientation certainly played a dominant role in burial from the prehistoric onwards (Taylor 2001, 32, 138).

The importance of the body being lain along a north-south axis, is concurrent with the data from all of these cemeteries. However, the variation in the direction of the face would seem inextricably linked to the growing importance of the role of the sun in the ideology of rebirth and the afterlife (Taylor 2001, 138). Previously, in Upper Egypt, it seems that the dead were most commonly lain facing to the west, the realm of the dead, and this seems to have subsequently changed to concur with the perception of the journey as one of rebirth, facing the rising sun for the daily journey through the heavens. However, this ideology must surely have been encompassed within the burial ritual at an earlier date in Lower Egypt, since burial facing the rising sun had previously been common (Debono and Mortenson 1988, 46).



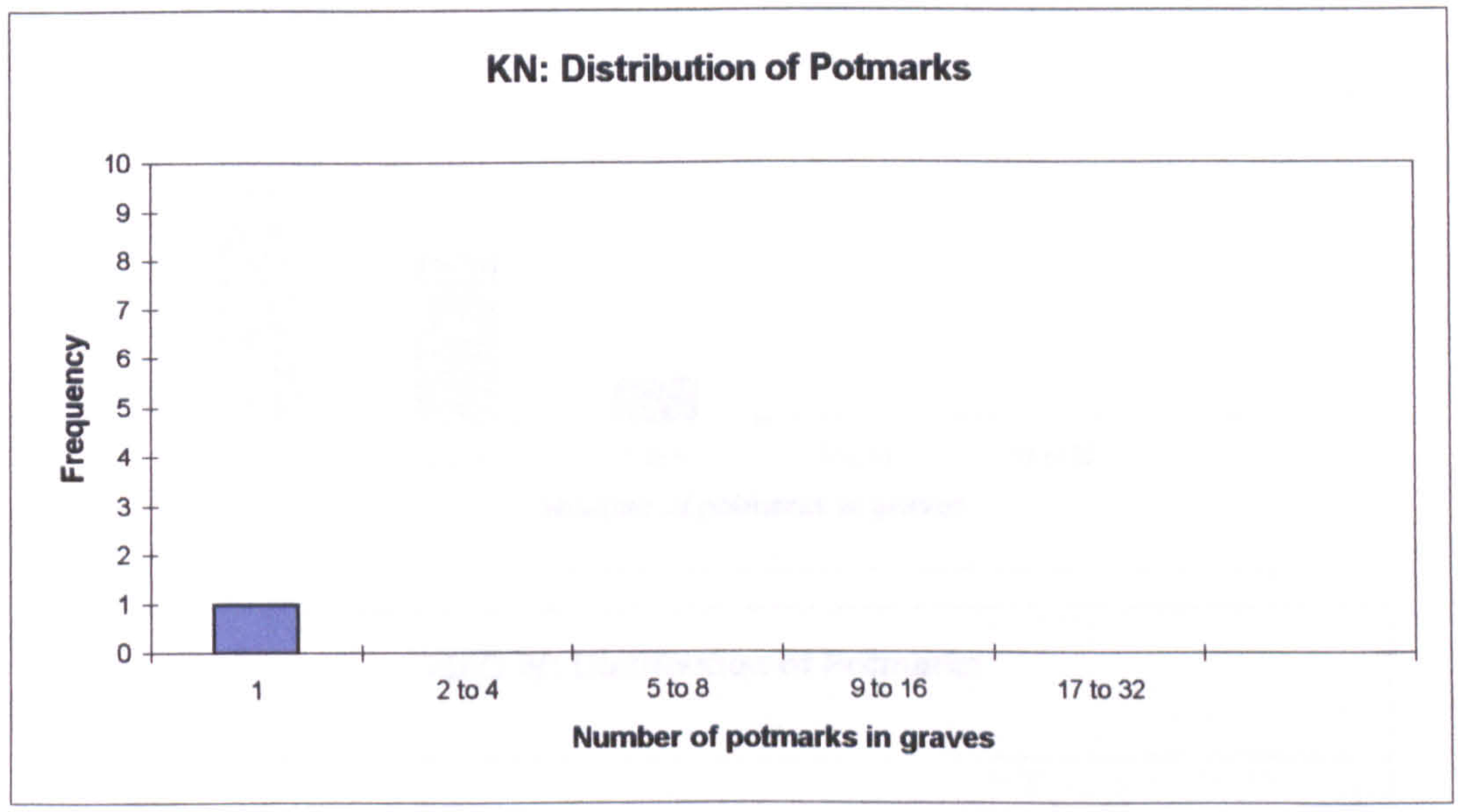
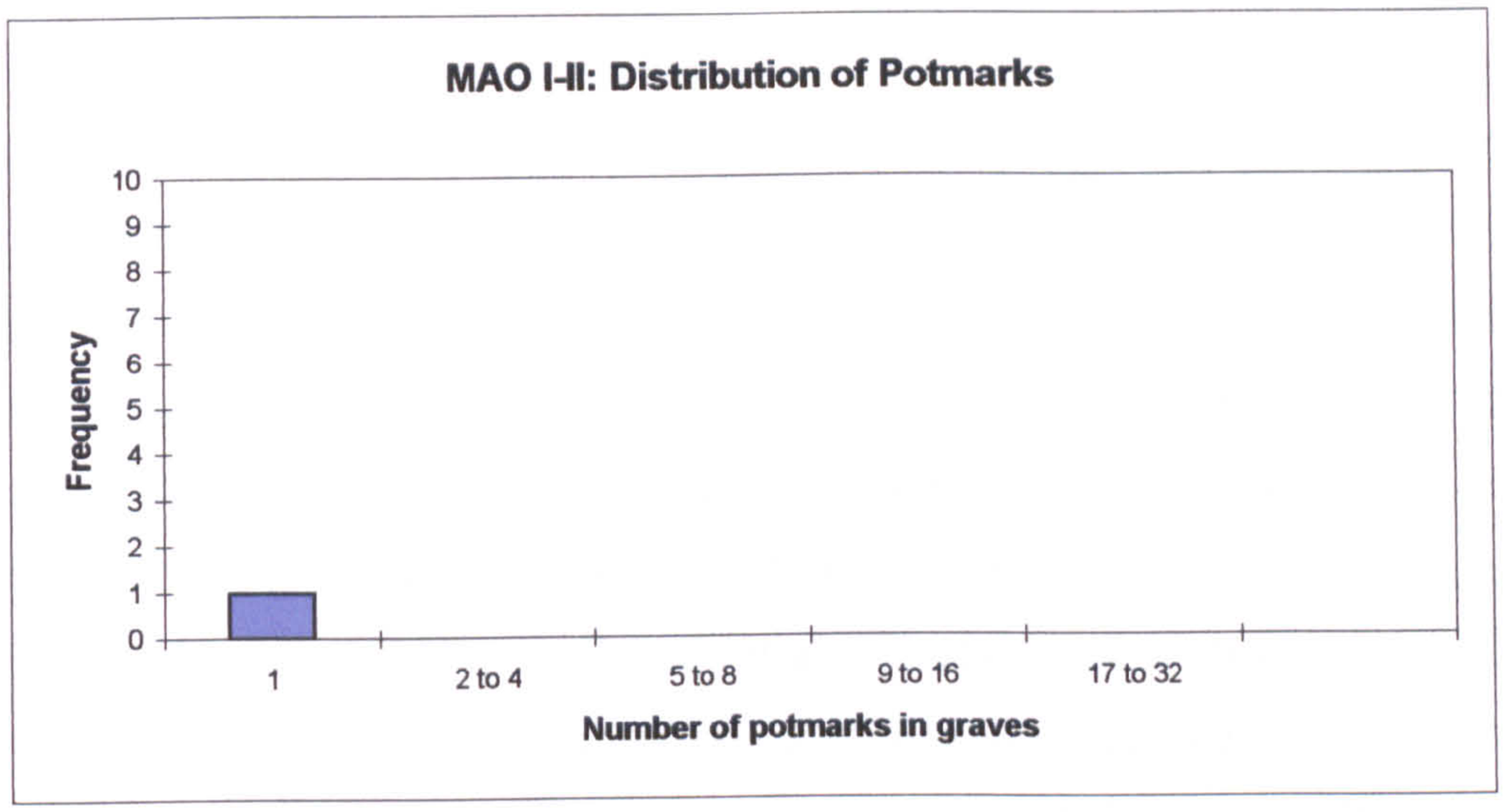
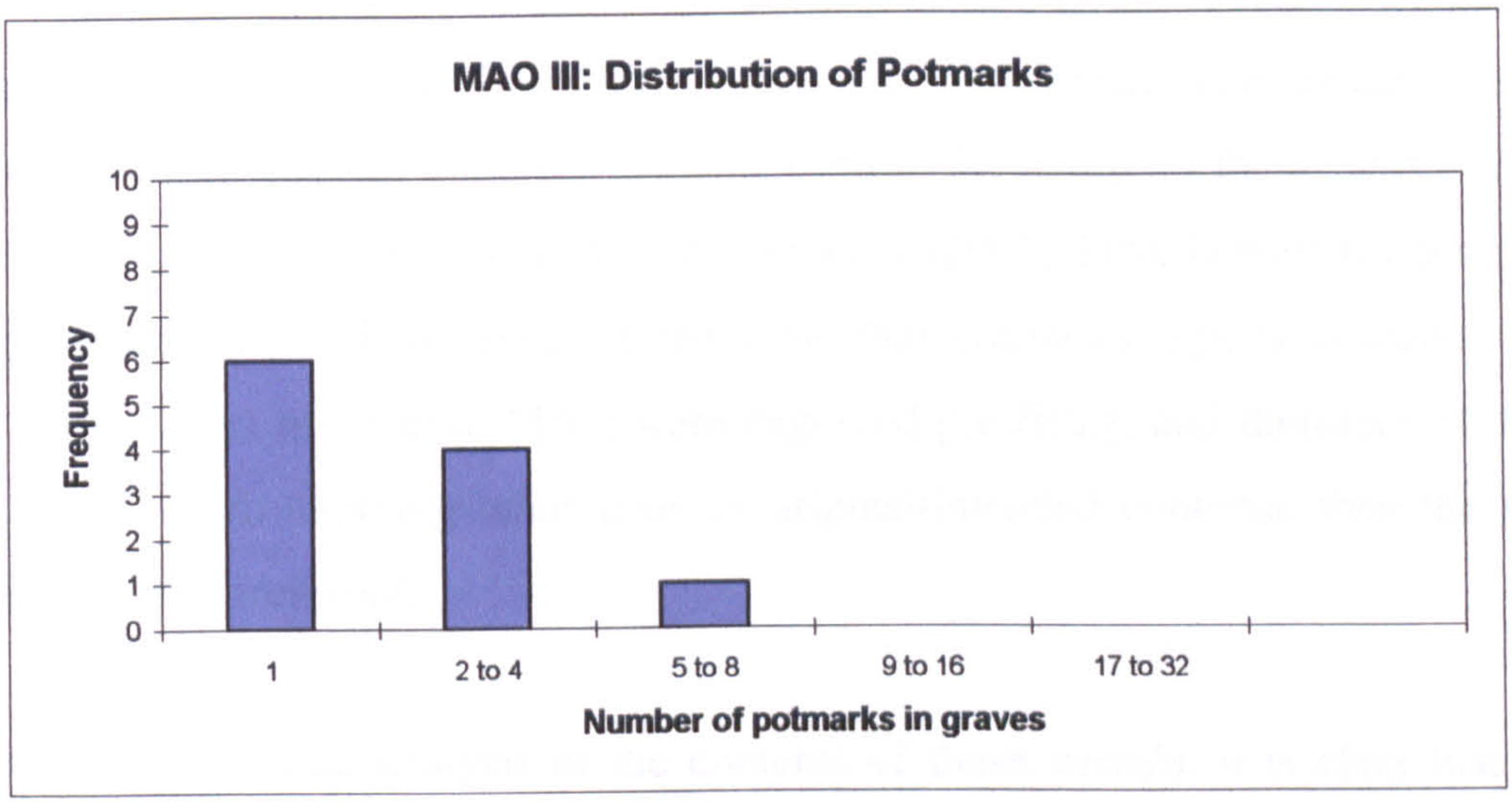


Figure 6.35: KHD and KN Frequency Distribution of Potmarks





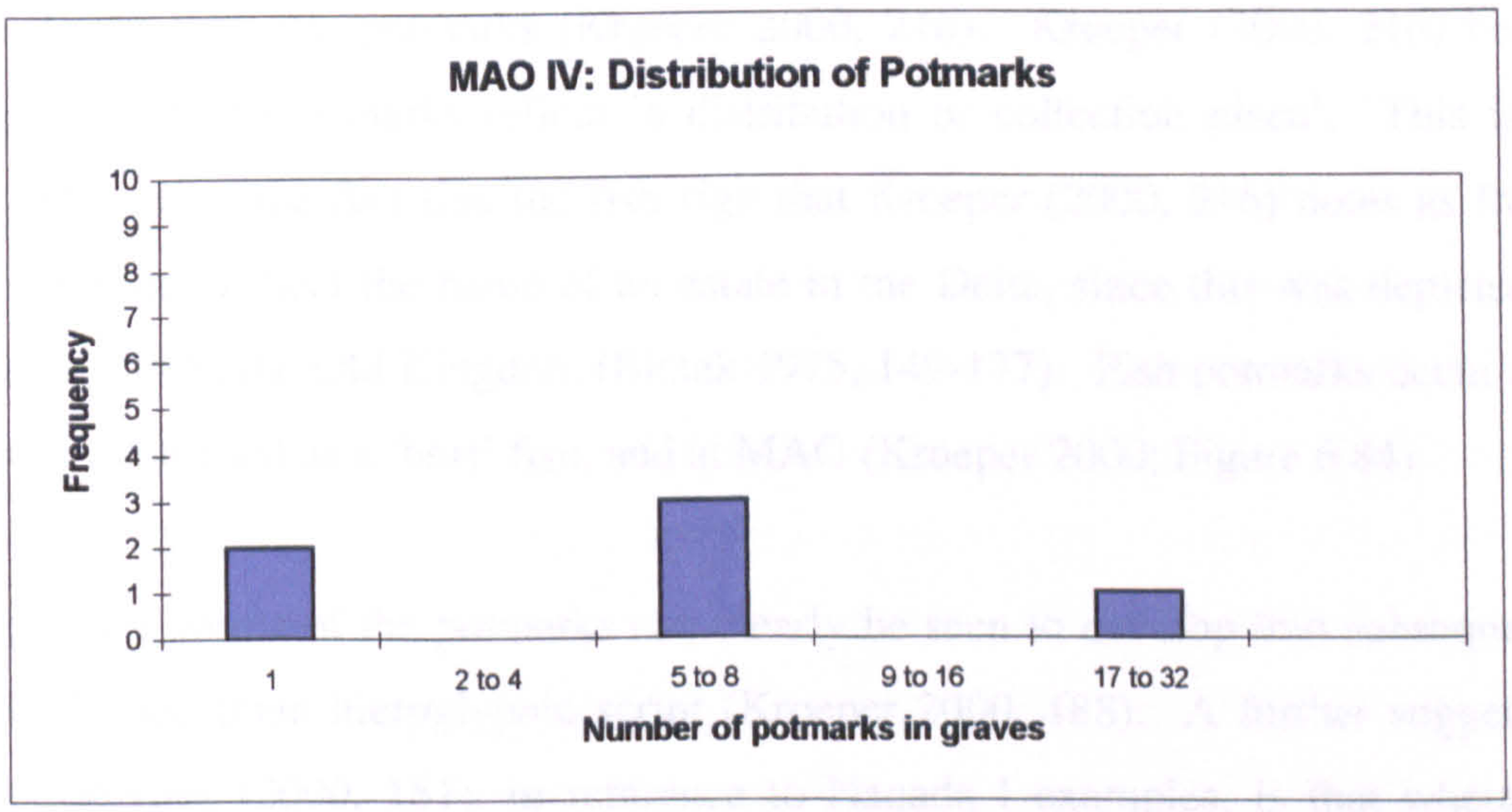


Figure 6.36: MAO Frequency Distribution of Potmarks

Frequency Distribution of Potmarks

This category includes the presence of potmarks and/or *serekhs*, both of which have been found at all of the sites. Potmarks are found both on ceramic and stone vessels (in the case of the latter only on a vessel from the large tomb 970 at KHD) and these marks may have played an important part in economic control, and may have indicated ownership, contents or quantity, potters' marks or even tax marks (see also van den Brink 1992b, 275 note 4 for detailed list of possible purposes; Postgate *et al* 1995, 465-466; Adams and Ciałowicz 1997, 34; Kroeper 2000, 216). Adams and Ciałowicz (1997, 34) note that 'the first signs of writing' dating to Naqada IIIa2 (IIIA1), from tomb U-j at Abydos are in favour of 'the existence of a fairly advanced administration before 3200BC', that is before the end of the state formation process. Van den Brink (1988, 78) notes that the potmarks found in grave B200/160 1 all have two signs, 'one usually denoting a numeral', which appears a logical assessment from the nature of these marks in terms of the later hieroglyphic numerical system. Kroeper (2000, 216), however, does point to a major stumbling block in terms of the view that potmarks signify contents, since all potmarks (except nine) from MAO were engraved pre-firing, and therefore, if the vessel was refilled with anything other than its original/intended contents, then the potmarks would become irrelevant.

Furthermore, from an analysis of the contents of these vessels, it is clear that they are inconsistent with the potmarks (Kroeper 2000, 216). Kroeper (2000, 216) believes it more likely that the marks reflect 'a distribution or collection place'. This is further substantiated by the fact that the fish sign that Kroeper (2000, 216) notes as frequently occurring may reflect the name of an estate in the Delta, since this was depicted with a fish sign during the Old Kingdom (Bietak 1975, 149-177). Fish potmarks occur at KHD, one such identified as a 'bori' fish, and at MAO (Kroeper 2000; Figure 6.84).

Some of the forms of the potmarks can clearly be seen to develop into subsequent signs within the Egyptian hieroglyphic script (Kroeper 2000, 188). A further suggestion, by Midant-Reynes (2000, 181), in reference to Naqada I examples, is that where similar signs occur on different types of vessels then these may rather indicate ownership. While it is not possible to look in depth at the types of marks present as part of this research, it is

notable that between the sites under investigation here, there are many similarities in terms of the formation of the potmarks (van den Brink 1988; Kroeper 2000).

All four cemeteries display a wide range of potmarks, with the largest published corpus coming from MAO (Kroeper 2000). At KHD 5% of the burials contain a varying number of potmarks on sherds, broken, and complete vessels (Figure 6.84). The only tombs that contain in excess of four potmarks (Figure 6.35) are the large tombs 913 and 970, which contain 28 and 19 potmarks respectively. The MAO cemetery illustrates (Figure 6.36), temporally, that potmarks are not at all common until phases III and IV. During MAO I-II there is only one incidence of a potmark, while during MAO III 32% of the sample contain potmarks (with between one and three per grave), and in MAO IV 17.6% of the sample contain potmarks (Kroeper 1992, 131-134; 1996, 74; Kroeper and Wildung 1994; 2000). During MAO IV, while the majority of graves with potmarks contain between one and four potmarks, there is one grave (1590) with 22, which is similar to the pattern at KHD (Kroeper 1992, 134).

Kroeper (2000, 215) comments that in MAO III and IV the increase in potmarks is in line with the 'overall increase in the amount of offerings placed in the burials'. However, does the presence of a potmark within a grave necessarily reflect its wealth? In the earliest phase at MAO, the one grave containing a potmark (grave 401), that of a male adult, is poorly provided for, so even the exceptional presence of a potmark here does not suggest a wealthier or more privileged individual (Kroeper and Wildung 2000, 74). This may rather hint at the possibility that, if this potmark does indicate external contact, then such contact did not require substantiation through grave wealth during this earliest phase at MAO. The majority of graves with potmarks in MAO III and IV contain in excess of ten vessels, however it does not follow that all of the wealthiest tombs contain potmarks. Out of the 'elite' tombs at MAO, it is now possible to confirm (Kroeper 2000) that only one grave appears to be without potmarks contains potmarks, with the other graves containg one, two, four, six, six, 11 and 35 potmarks. Approximately 50% of the burials with potmarks from KHD contain in excess of ten grave goods, and the majority of graves with multiple potmarks also contain a high number of grave goods (see further discussion in Section 7.1.5).

What is certain, as mentioned above, is that the data from MAO confirm that potmarks become increasingly common in the later phases of the cemetery, from which we can infer an increasing need for organisation in terms of distribution and, indeed, greater contact with the growing centralisation in Egypt. In addition, the increase in potmarks may also suggest that a greater number of individuals at MAO are no longer engaged in full-time subsistence, rather craft production for which the state (possibly through a headperson based at MAO) provides resources.

The information supplied in Figure 6.35 and from the KN recording sheets belies the actual extent of the presence of potmarks and *serekhs* at KN. There is only one recording sheet, for grave 78, which states the presence of a potmark, the *k3* sign, on a plate covering for a jar burial. However, articles that have been published on the site clearly confirm that indeed a large number of potmarks have been found, and also several *serekhs* (the device employed incorporating the name of the king within palace façade design), some anonymous, but also that of king Narmer, found on a potsherd (Bakr 1988, 50-51, pl. 1a, 1b; 1993, 10; van den Brink 1996; 2001). A fragment of a ceramic jar from TIA shows a *serekh*, found in the vicinity of the cemetery in area B, and both graves B200/160 1 and B200/170 1 have 16 potmarks apiece (van den Brink 1988; van Haarlem 1993).

On the matter of *serekhs*, only two have been found to date at KHD, one from tomb 913 (King Narmer) in the south of the cemetery, and one from grave 1008 in the north of the cemetery (King Sekhen/Ka) (Hassan 2000a, 39; Hassan *et al* in press; Figure 6.85). Both of these graves contain a high number of types, but represent temporally opposite ends of the scale (Hassan 2000a, 39). There are also two *serekhs* present in the sample of graves from MAO that are being analysed here, both in MAO III, with grave 44 containing that of King Narmer and grave 160 containing a vessel bearing the *serekh* of King Horus Scorpion (Wildung 1984, 267; Kroeper and Wildung 1985, 75; 2000, 159; Kroeper 1987, 76; Kroeper 1996, 74; Ciałowicz 2000, 63, 65). Van den Brink (2001, 43) argues in favour of reading the latter king's name as 'Horus (Crocodile) the Subduer'. Graves 44 and 160 are of moderate volume and both contain six types of artefact (Kroeper and

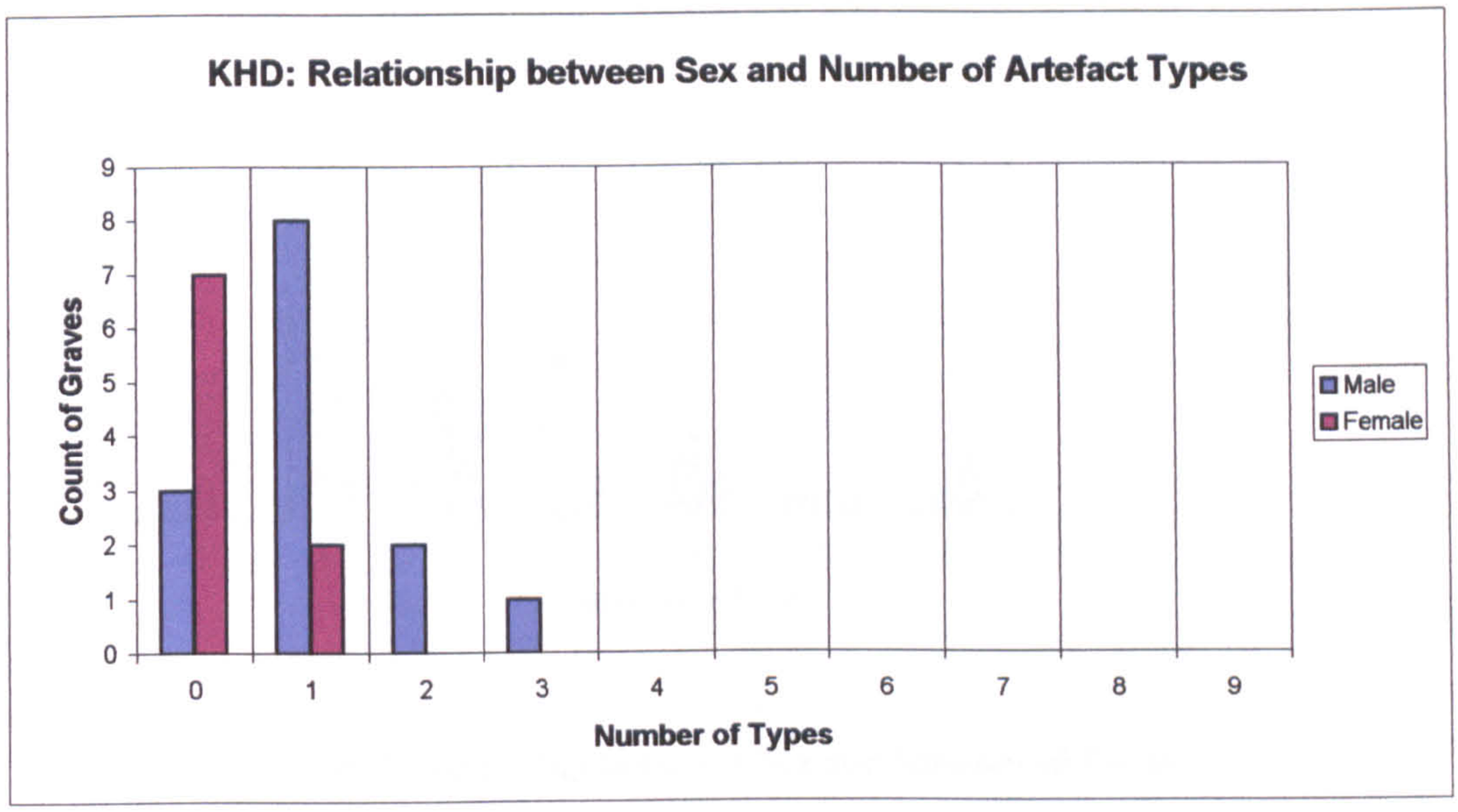
Wildung 1985, 75; 2000, 159; Kroeper 1996, 74). Kroeper (2000, 208) confirms an additional five *serekhs* at MAO, including one in the 'elite' tomb 1590. Therefore, while at KHD *serekhs* appear in two graves, both wealthy relative to the site's overall prosperity at the particular point in time (grave 1008 being much earlier than 913), at MAO it seems that the presence of a *serekh* can also relate more closely to the number of types than size. At TIA, it is noted that a *serekh* was located on a potsherd in the vicinity of grave B200/160 1, which is a wealthy grave both in terms of size and construction, and numbers and range of artefacts present, and van den Brink (1988, 78) comments on the deceased clearly having 'access to the royal workshops', presumably in terms of the presence of a *serekh* in the vicinity. Wilkinson (1996, 69) similarly comments that the presence of *serekhs* suggest 'the grave owner enjoyed the patronage of the court'. However, while the wealth and construction of the TIA grave in particular might lend itself to such an interpretation, it is at least important to be aware that the presence of a *serekh* does not automatically make such a conclusion likely, as we have seen above from the evidence both at MAO and KN. It is noteworthy that Wenke (1991, 307) remarks of the presence of the Narmer *serekh* on vessels of Early Dynastic date, that they indicate by the end of this period, and probably for a long time before that there was integration 'both socioeconomically and politically' between the Delta and the Nile Valley. As noted in a forthcoming paper by van Wetering and Tassie (in press), we simply do not know the 'implications' of finds of *serekhs*, neither, I should add, can we be certain on every occasion of how and why they came to be buried with certain individuals. It is thought, however, that the appearance of the king's name suggests a form of centralised control over re-distribution (Adams and Ciałowicz 1997, 35). It should also be noted here that potsherds bearing Narmer's name have been found at sites in Palestine, including Tell-Gath and Arad (Shaheen 1998, 96). I should like to add here, that since the full corpus of MAO potmarks/*serekhs* has now been published, it still confirms a low number of graves with potmarks for the earliest cemetery (three), and interestingly reveals little difference in the relationship between the percentage of male and female graves with potmarks (8% to 10% respectively), with only 2% of child burials containing potmarks (Kroeper 2000, 215).

6.2.4 Data analysis stage four, bivariate *(Excel)*

The fourth section of my statistical analysis is bivariate, and examines the data for relationships between wealth, effort and acquired or inherited status (see Section 4.2.4). The archaeological correlates that I have used for these three categories are:

Wealth	[Total Grave Goods [[Total Number of Types
Effort	[Distance Scale (see Section 4.3.1) [[Grave Size
Acquired/ Inherited Status	[Sex [[Age

This analysis will test whether certain assumptions or expectations necessarily concur with the data. These assumptions include: whether large grave size (effort) is commensurate with a high quantity of total goods (wealth) and, in turn, a high number of artefact types (wealth); whether a high occurrence of distance materials (effort) equates to a high number of types (wealth); and whether there are consistent relationships with these categories and sex and age (acquired/inherited status). Where temporal divisions are available at MAO, I can assess how these relationships change over time, and what implications these have for social structure within the living community. I will then be in a position to look at all of the sites, side by side, where they overlap in terms of relative chronology, to see whether they all appear to show the same type of social organisation, or whether different kinds of social organisation are in place by the stage at which the cemetery goes out of use.



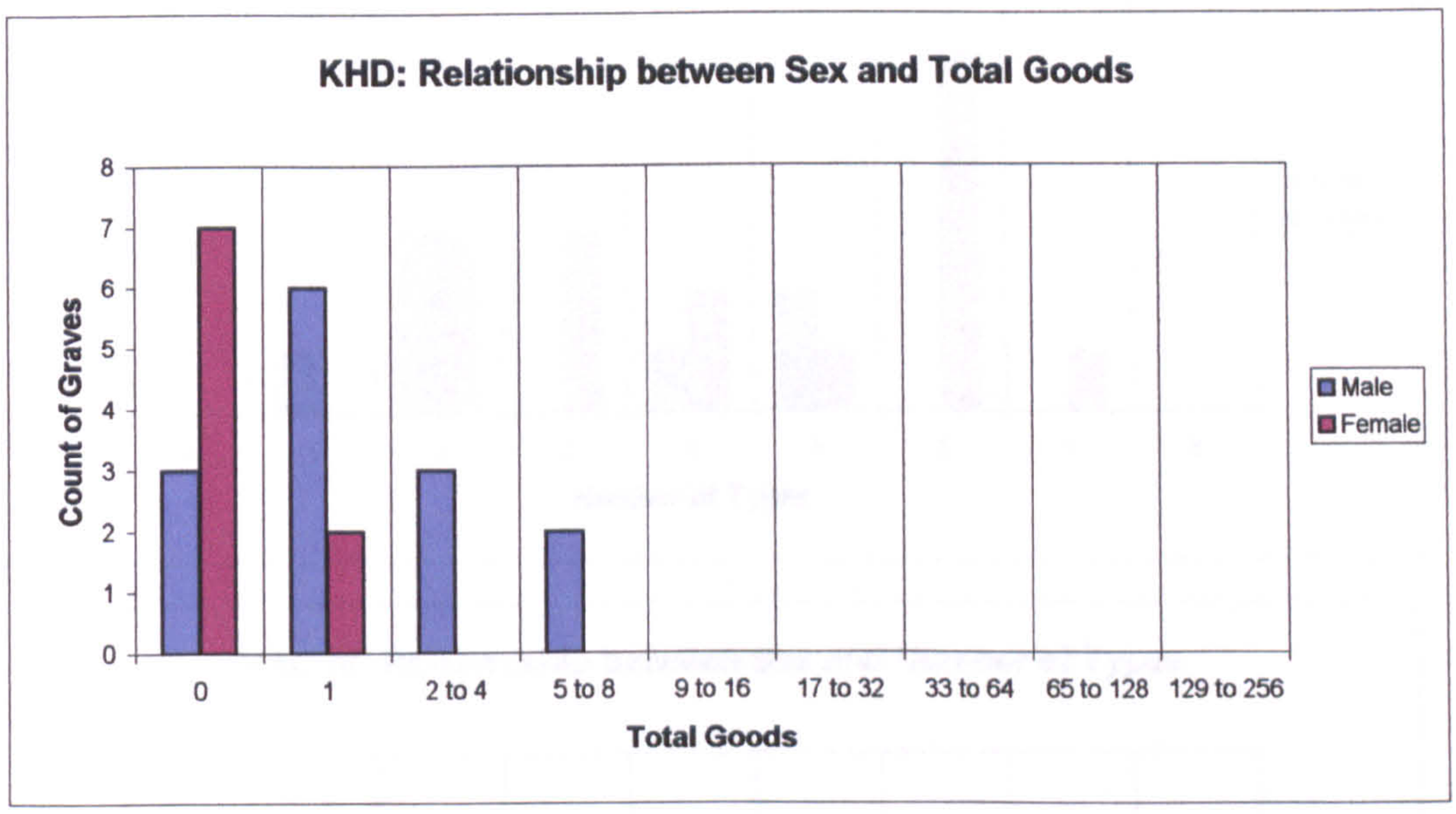
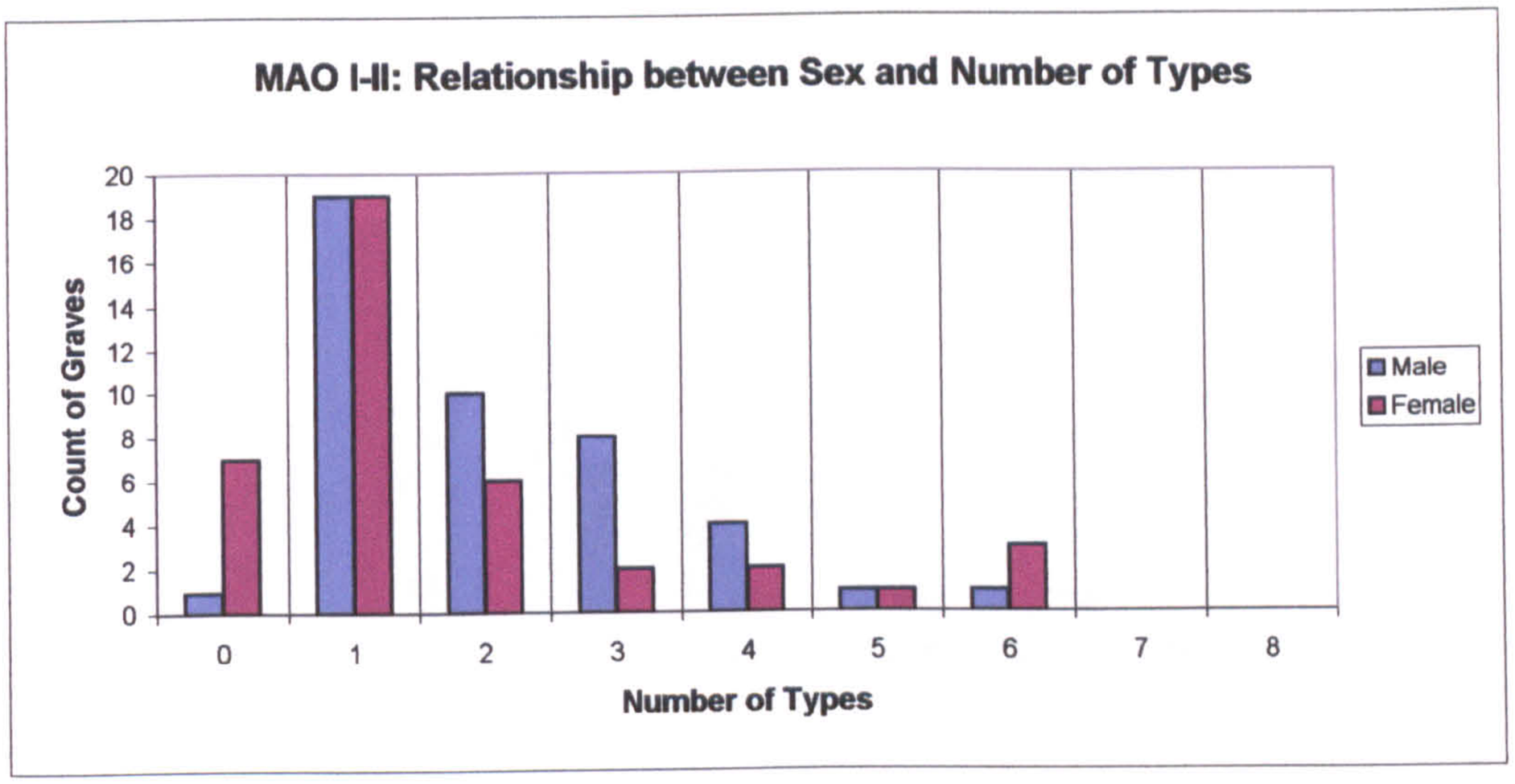
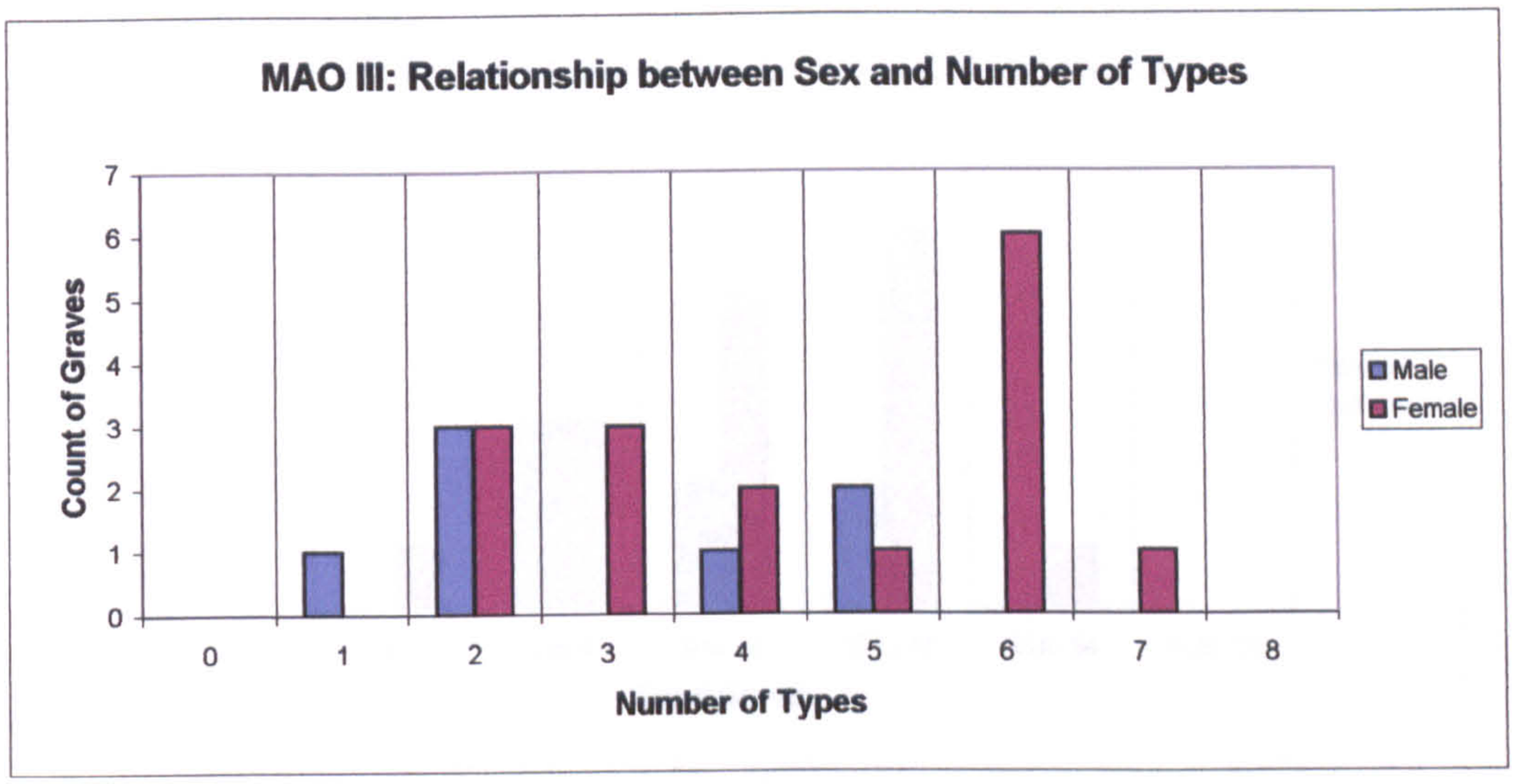


Figure 6.37: KHD Relationship between Sex and Number of Types, and Sex and Total Goods





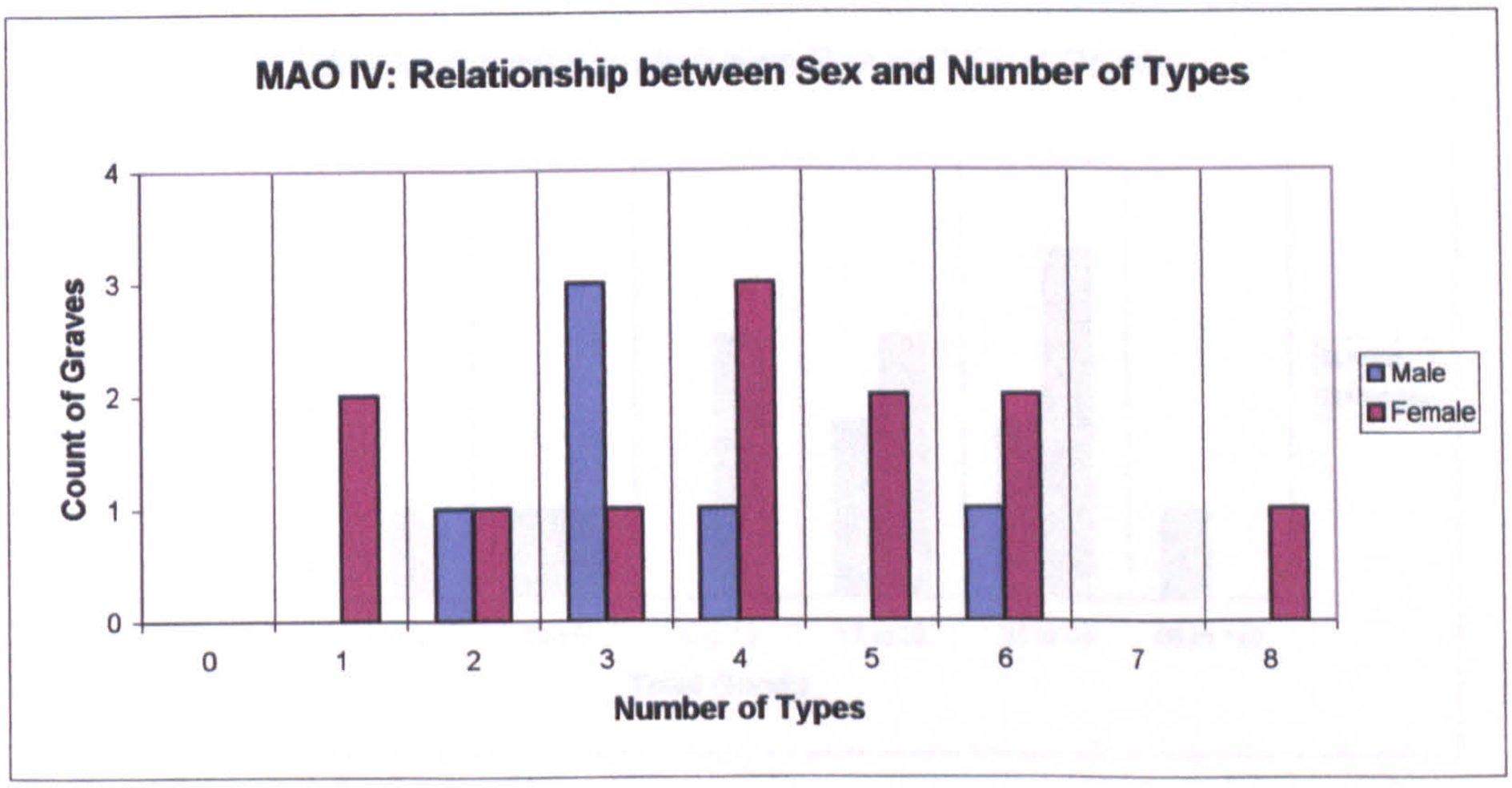
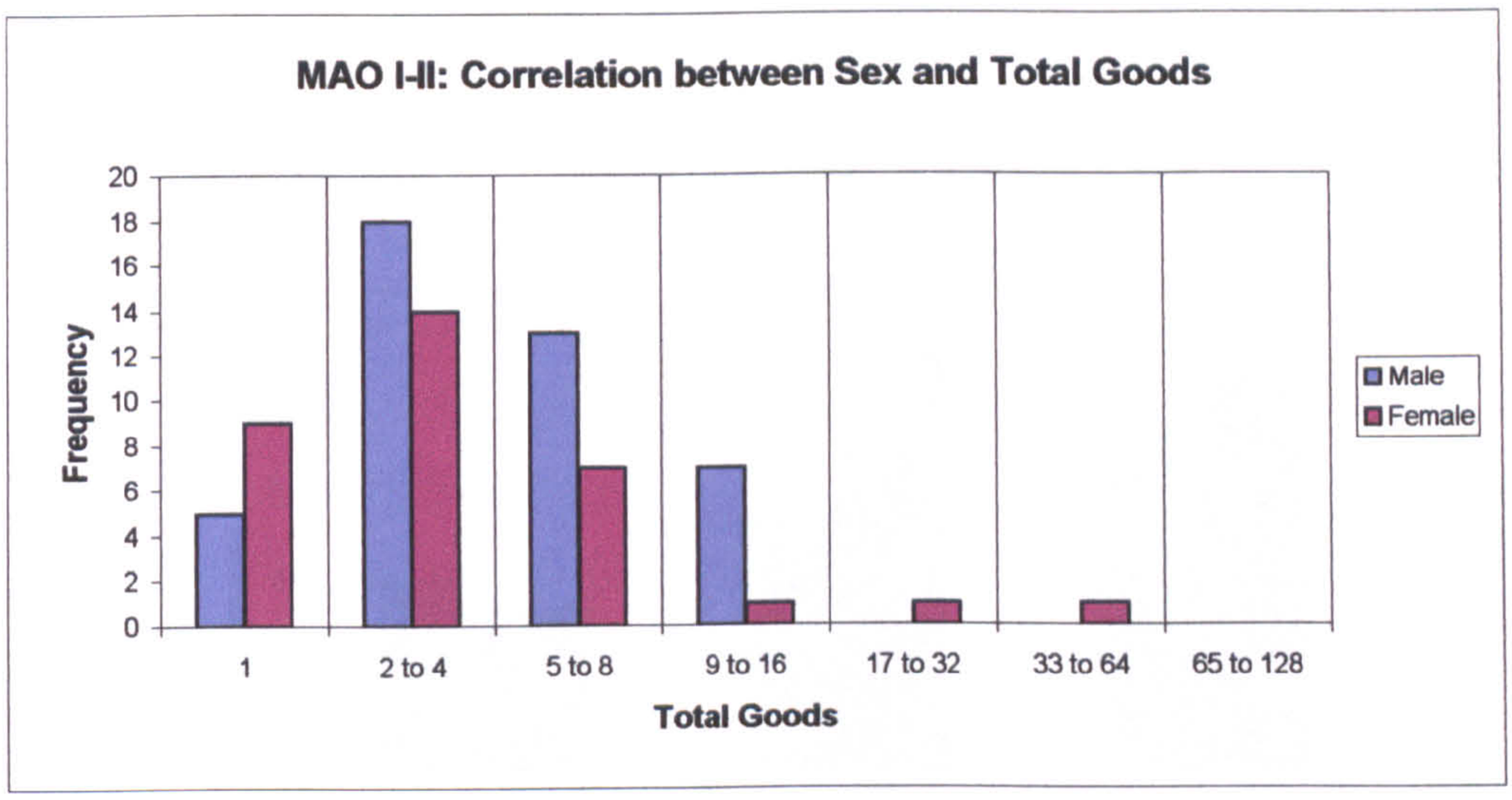
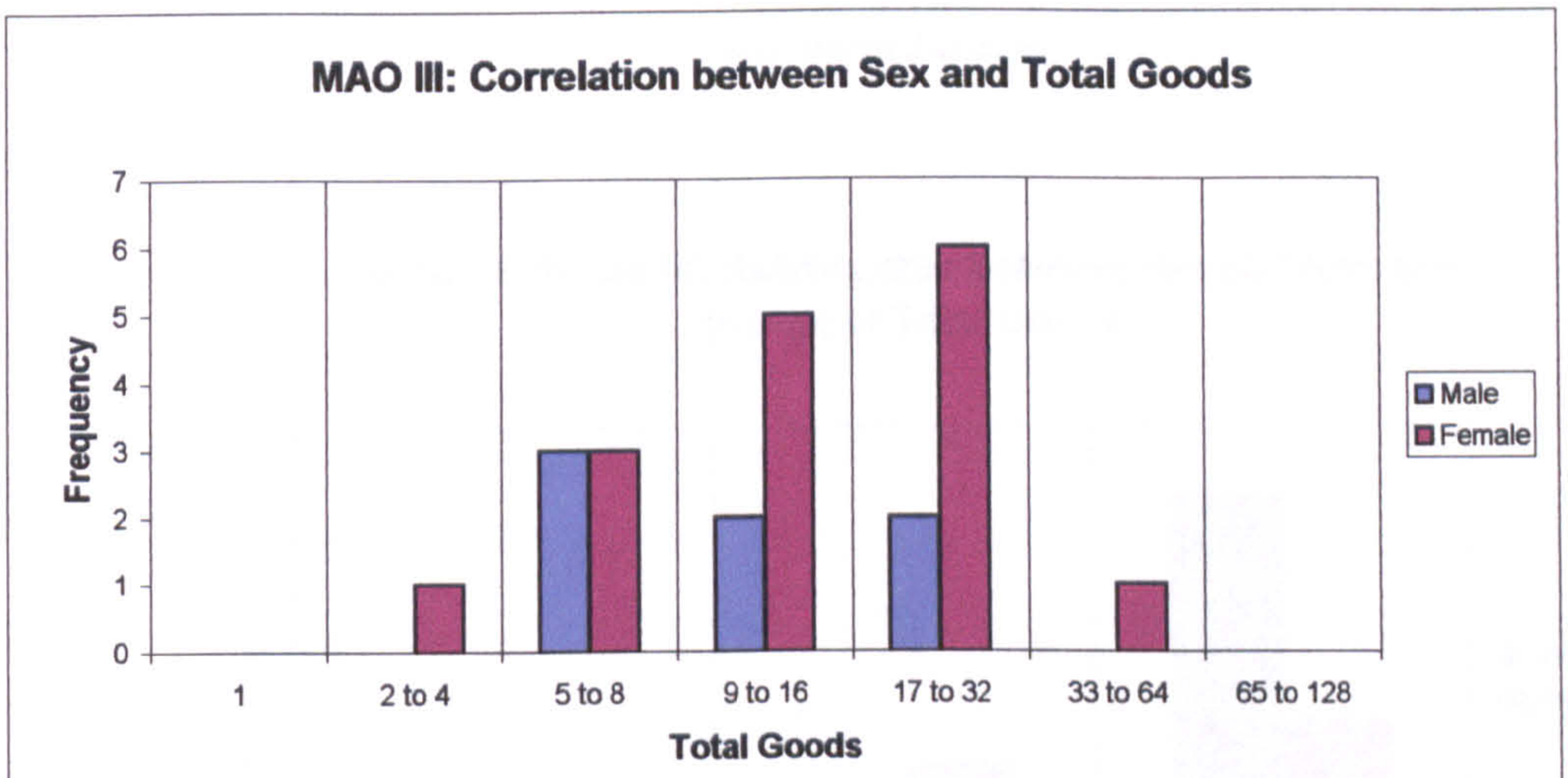


Figure 6.38: MAO Relationship between Sex and Number of Types





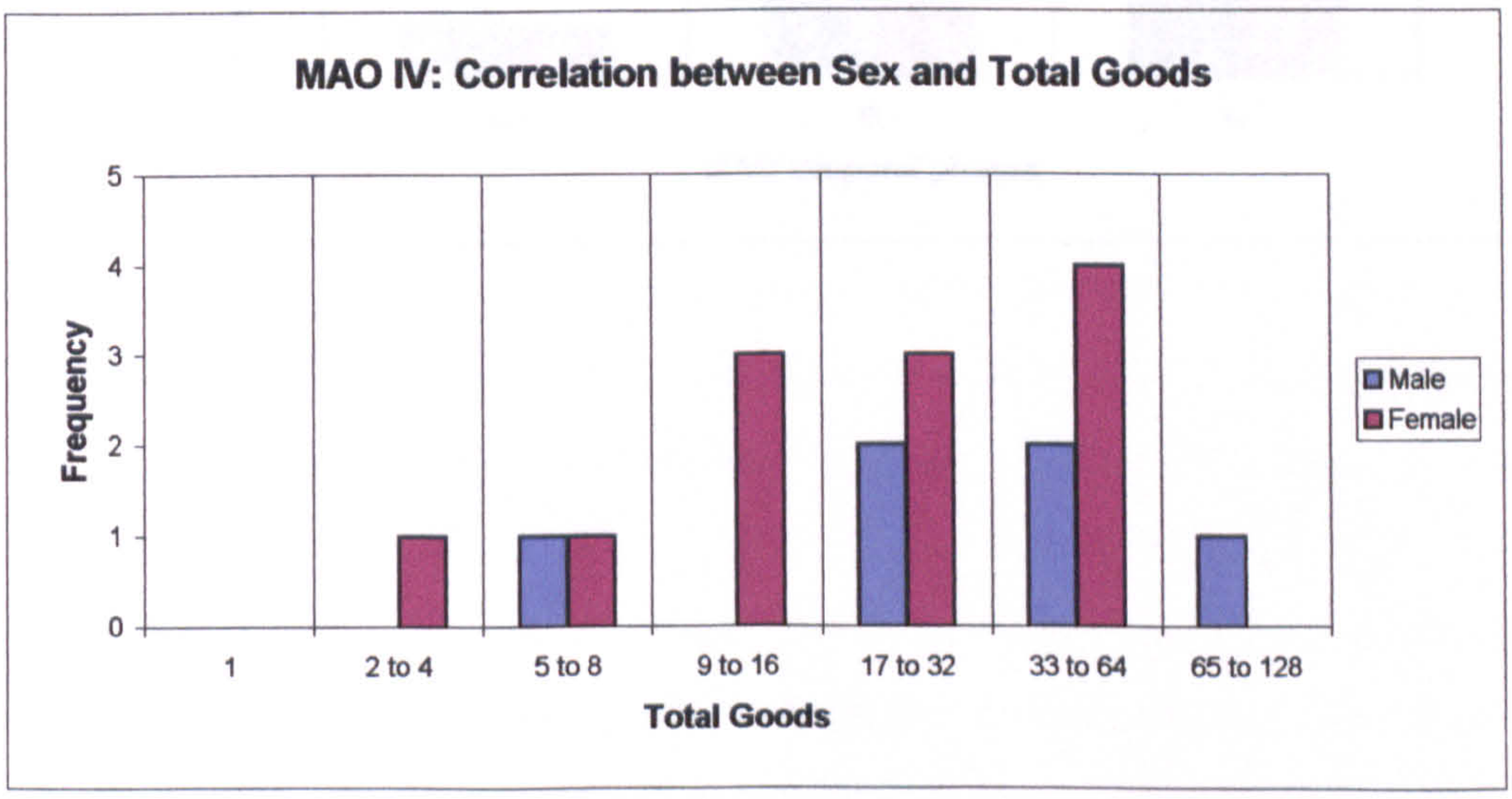
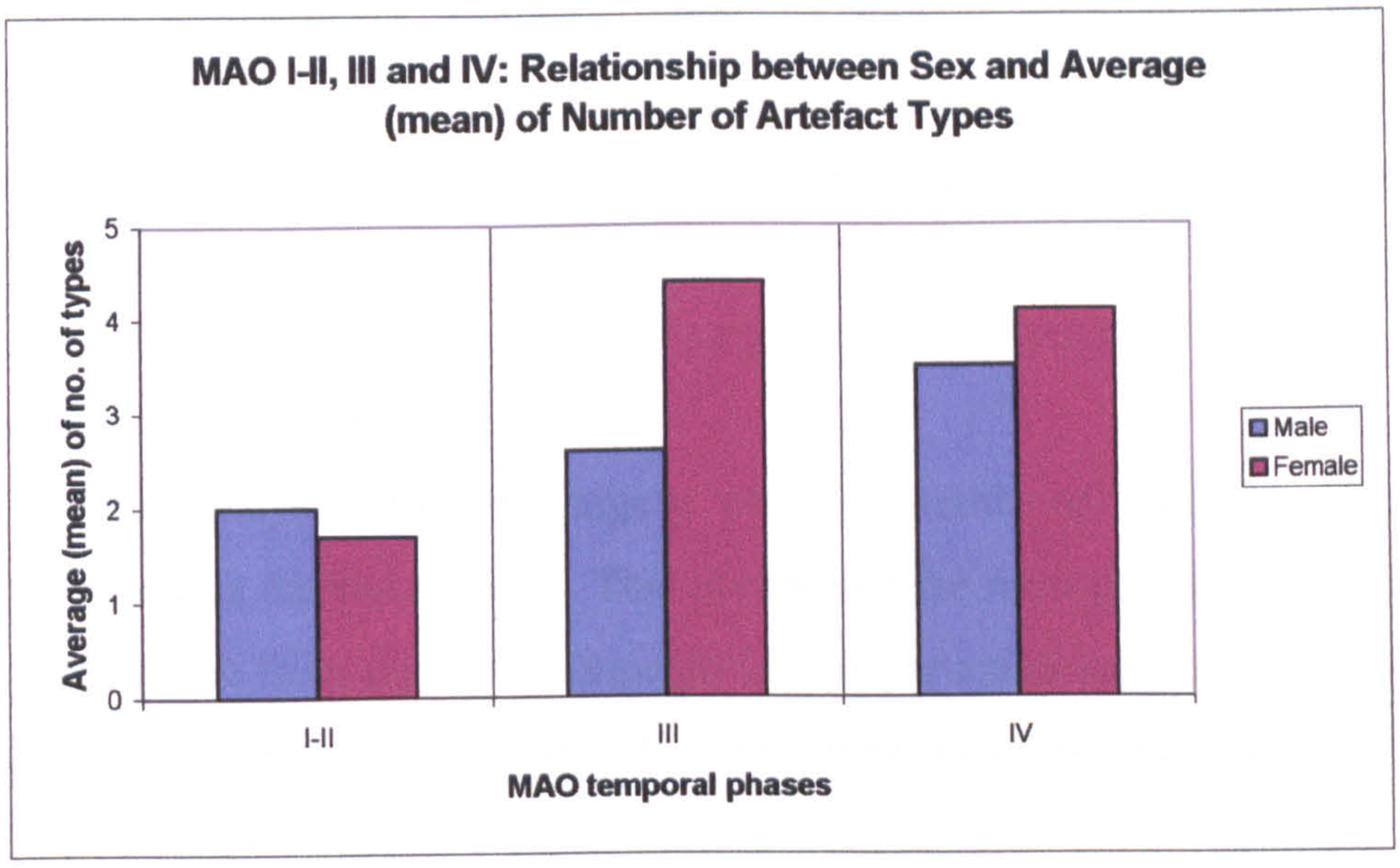


Figure 6.39: MAO Relationship between Sex and Total Goods



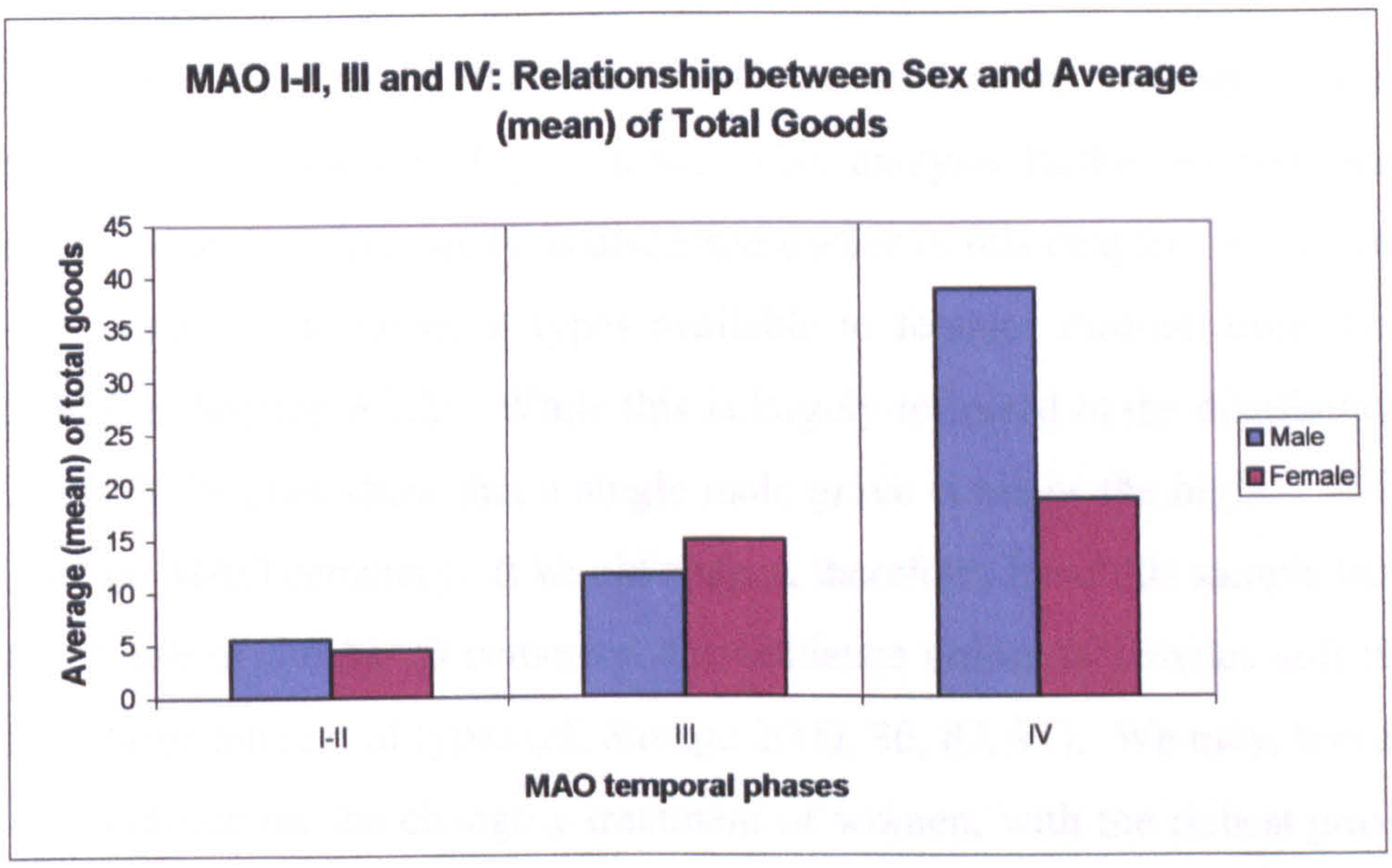


Figure 6.40: MAO Relationship between Sex and Number of Types and Total Goods (Averages)

6.2.4.1 Acquired/inherited status: wealth

In this subsection, the variables associated with investigating whether status may be acquired or inherited (sex and age) are compared with those of wealth (total grave goods and total numbers of artefact types). I will begin by investigating the relationship between sex and number of artefact types.

Sex: Artefact Types and Total Goods

The value of this analysis depends largely on the wealth of bioanthropological information provided by the site records. This means that the most detailed information is very likely to emerge from the MAO cemetery. This particular step of this section's analysis has, by necessity, omitted the KN data since there is insufficient sexing information to provide useful results.

A chart compiling the averages for the three MAO phases for both number of artefact types and total goods is shown in Figure 6.40. This analysis further strengthens the results of the *jaccard* and *socistat* analysis discussed earlier in this chapter, which clearly showed an increasingly wide range of types available to females through time (Figure 6.38 and Table 6.6 in Section 6.2.2). While this is largely reflected in the distribution of total goods, Figure 6.39 does show that a single male grave contains the highest number of total goods in the MAO cemetery. It would appear, therefore, from this sample that by the final phase of use of the MAO cemetery, the evidence points to females still being associated with a large amount of types (cf. Savage 2000, 86, 87, 91). We may, however, be seeing some evidence for the changing treatment of women, with the richest grave of confirmed sex being male, and notably, only one of the 'elite' graves at MAO being confirmed as female (Kroeper 1992, 129-130). A discussion in terms of grave size will add a further perspective with which to help establish the nature of changing social roles.

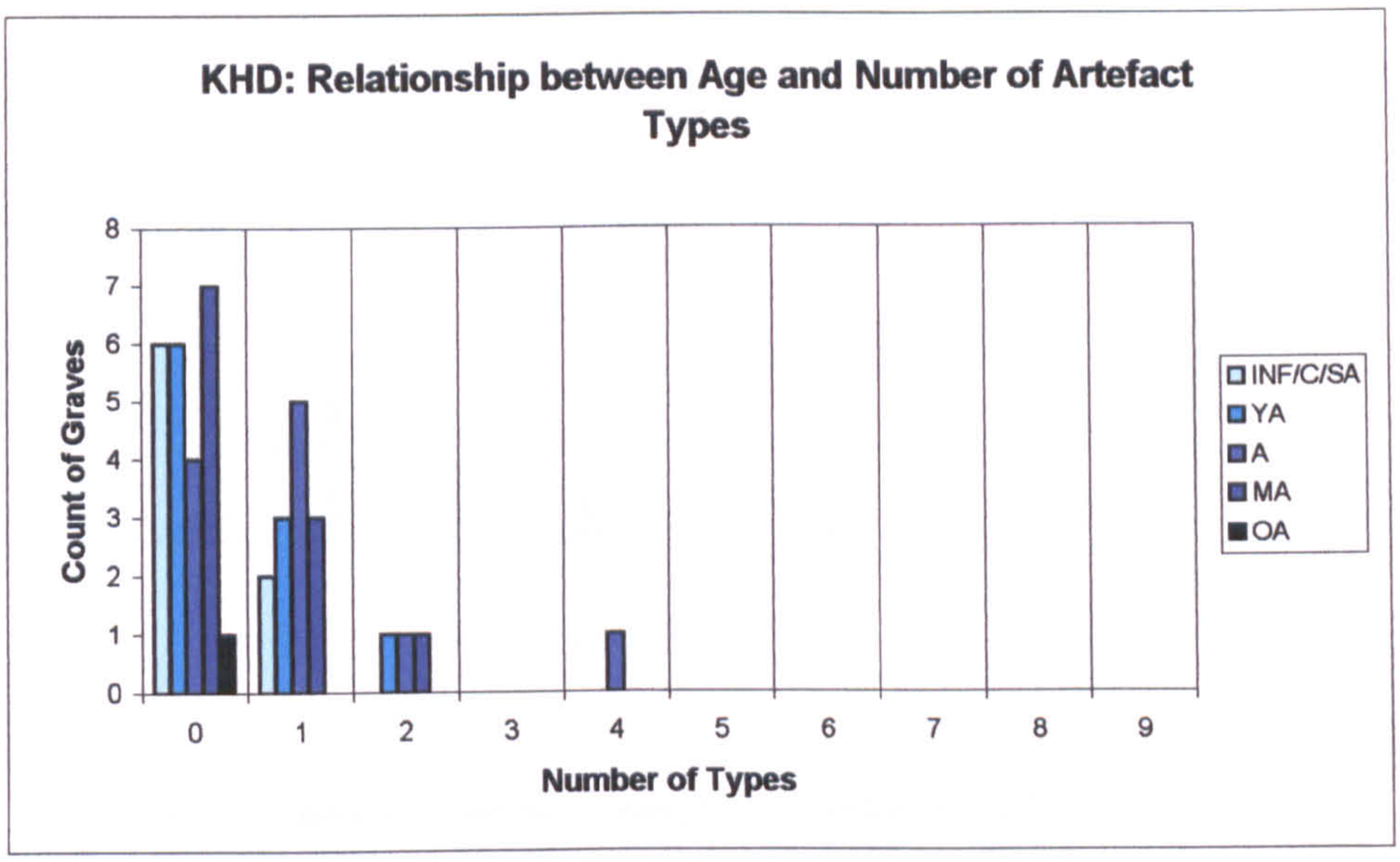
At KHD, the evidence for sexed burials may not be substantial enough to confirm or refute the MAO pattern, but we do know from the multiple burials alone that a female grave contained the widest variety of types (1027). It is extremely interesting that the other individual interred within grave 1027 was a male who had only been provided with a single ceramic vessel for the afterlife, despite the wide variety of types buried with the

female. In the single burials (Figure 6.37), however, the sample that has been sexed at KHD shows that male graves have a greater number of types, and in terms of total goods for the main burial population, males have a higher proportion of total goods than females. It is evident, however, that when considering once again the multiple burials, two females outnumber the total goods of the males, suggesting that the treatment of individuals is expressed in quite a distinct manner within this subgroup of burials (see Section 7.2 for further discussion).

Age: Artefact Types and Total Goods

For this stage of the analysis it is possible to include the data from KN, albeit only divided between those burials where the individual is confirmed as a child, and the remainder. For the other sites the data have been grouped into five categories (see Section 4.1.2): 1) infant/child/subadult, 2) young adult, 3) adult, 4) middle-adult, and 5) old adult; for MAO, the data can only be broken down into the first four categories. The youngest age group will be referred to hereafter simply as 'child' or 'children', for brevity's sake.

The data from the various sites differ quite dramatically in this analysis. The information pertaining to child burials is particularly interesting since at both KHD and KN children do not seem particularly well provided for in terms of the range of artefact types or total goods present with the burials (Figures 6.41 and 6.43) (cf. MacDonald 2001, 707). There is only minimal exception to this within the group of multiple burials at KHD (see Section 7.2). At MAO, however, children are fairly well represented across the board during all three stages of the cemetery's use, with graves containing up to six types in all phases (Figures 6.42). In MAO III, however, child burials appear to be less well provided for, although there are admittedly very few child burials available for analysis to substantiate this. It is also clear from the total goods charts for MAO IV that the number of both child and young adult burials decline in frequency as the total goods rise, whereas the adult graves actually increase in number.



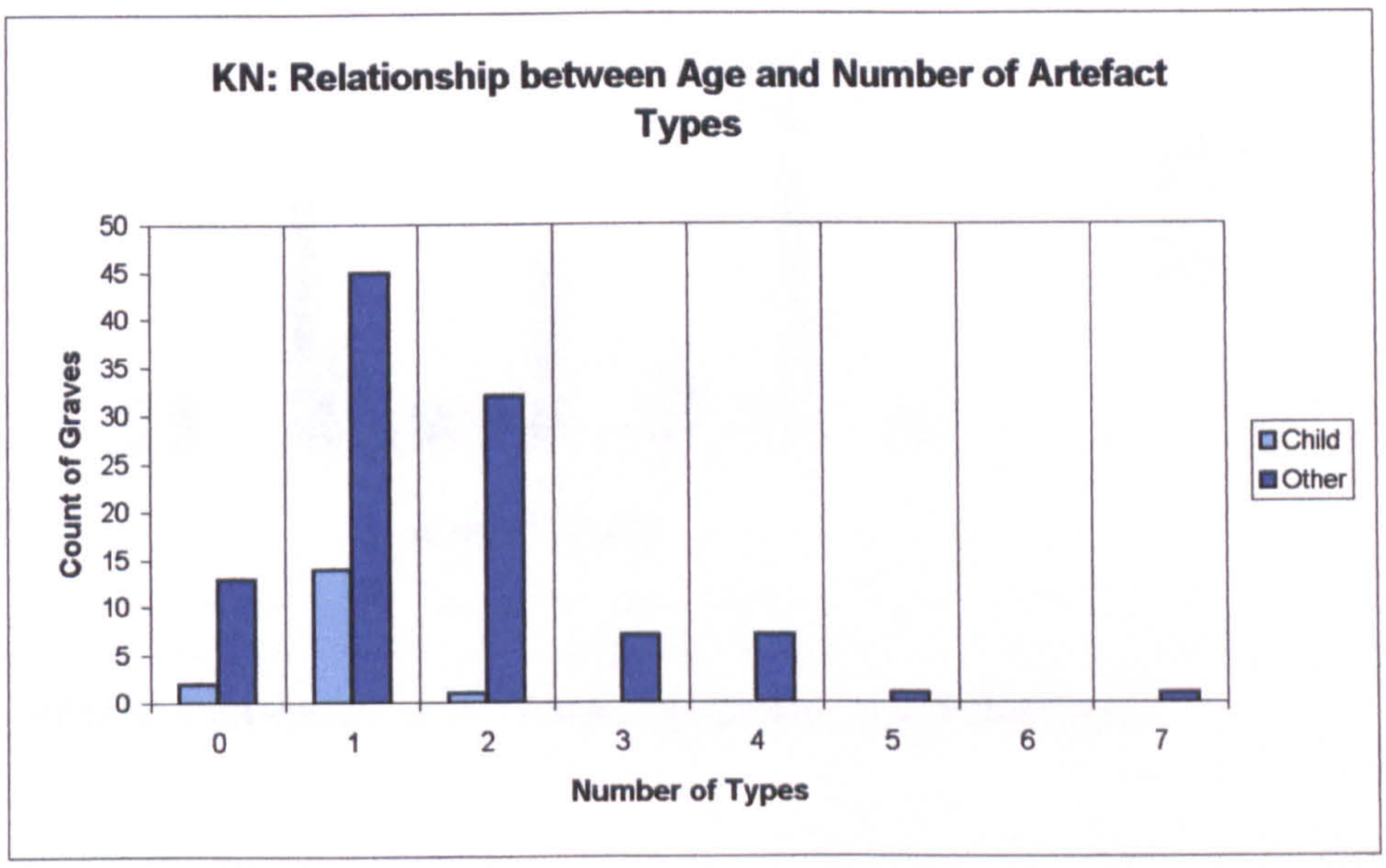
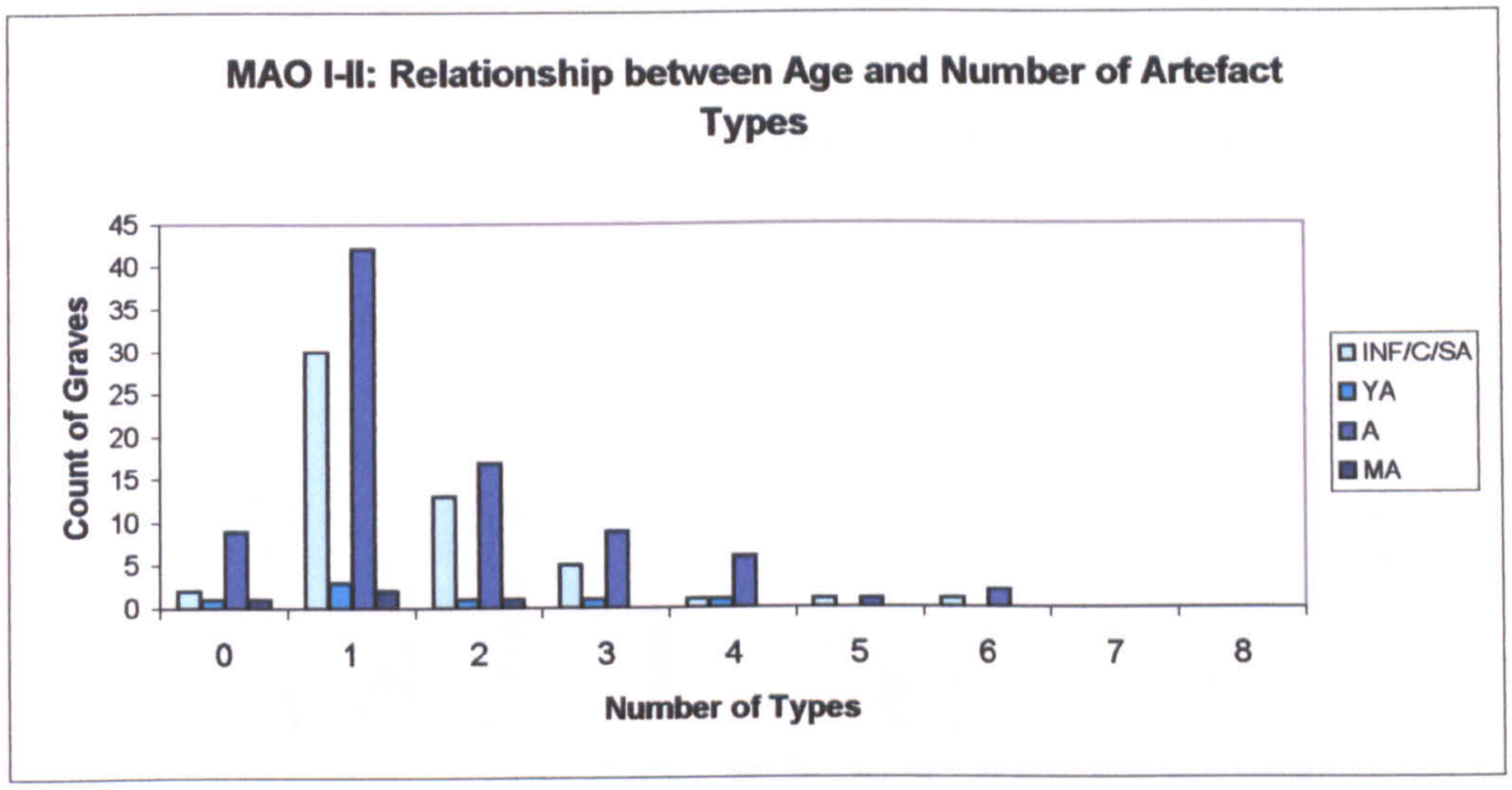
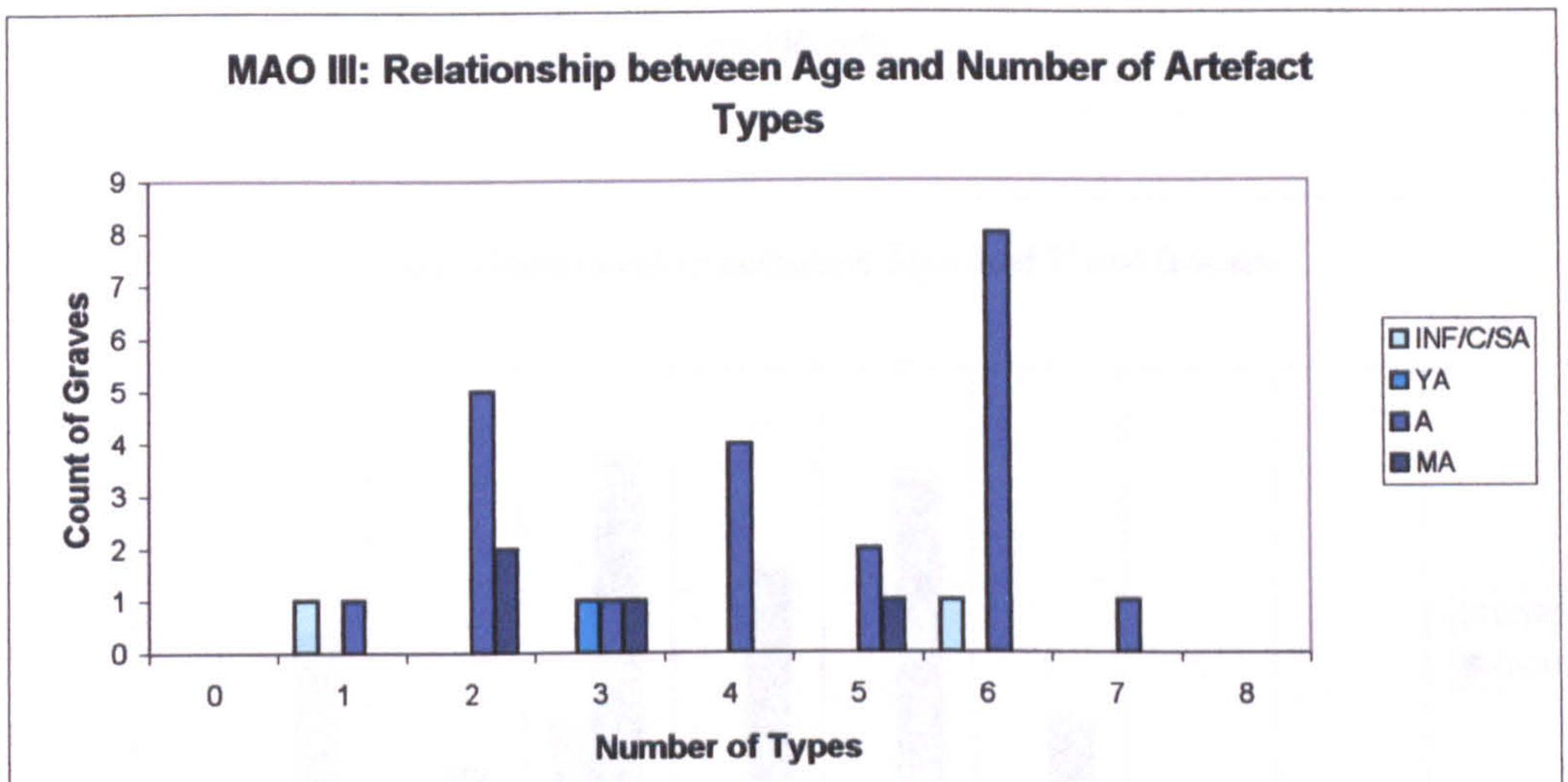


Figure 6.41: KHD and KN Relationship between Age and Number of Types (INF/C/SA: infant/child/subadult, YA: young adult, A: adult, MA: middle-adult, OA: old adult)





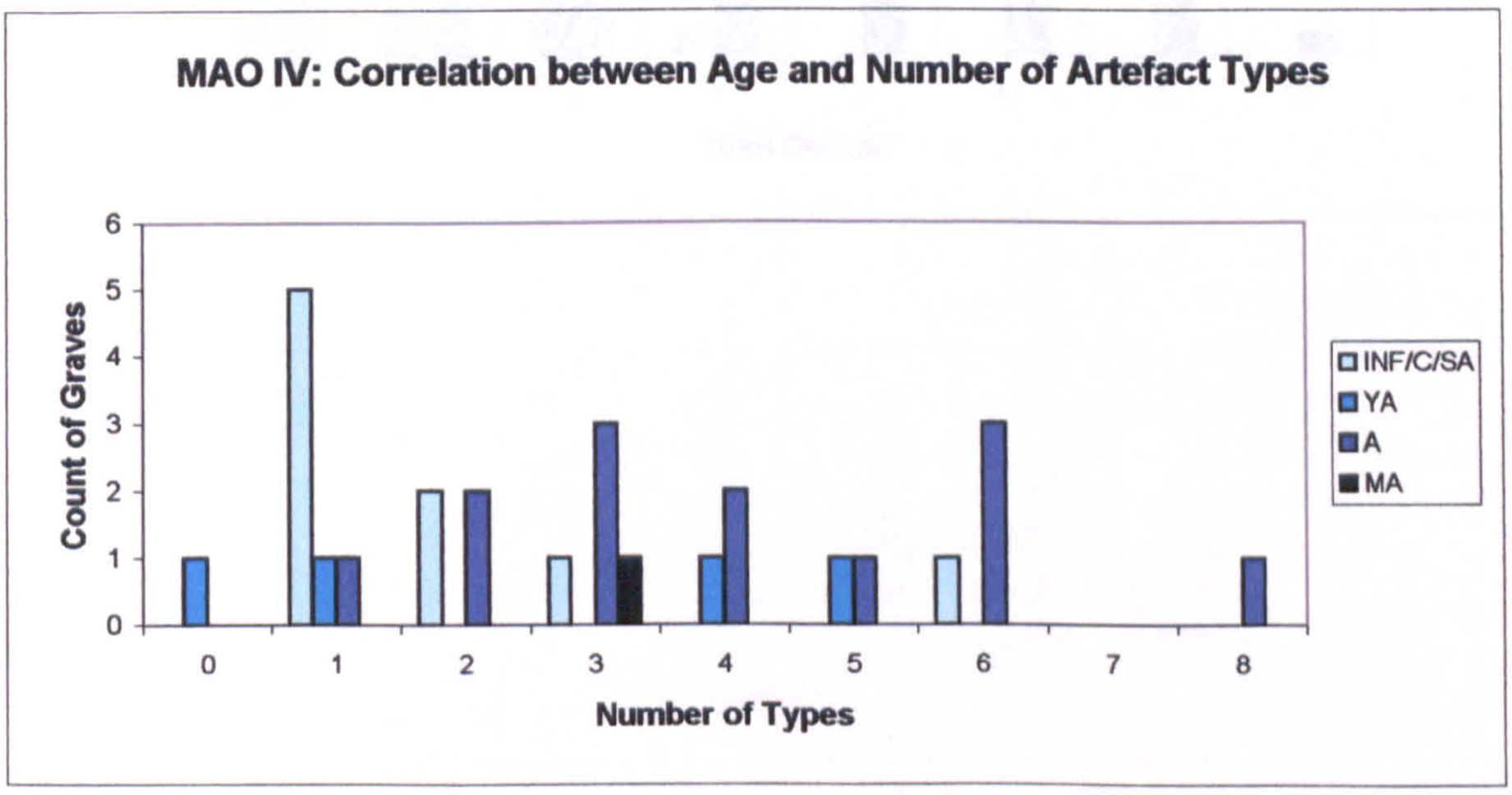
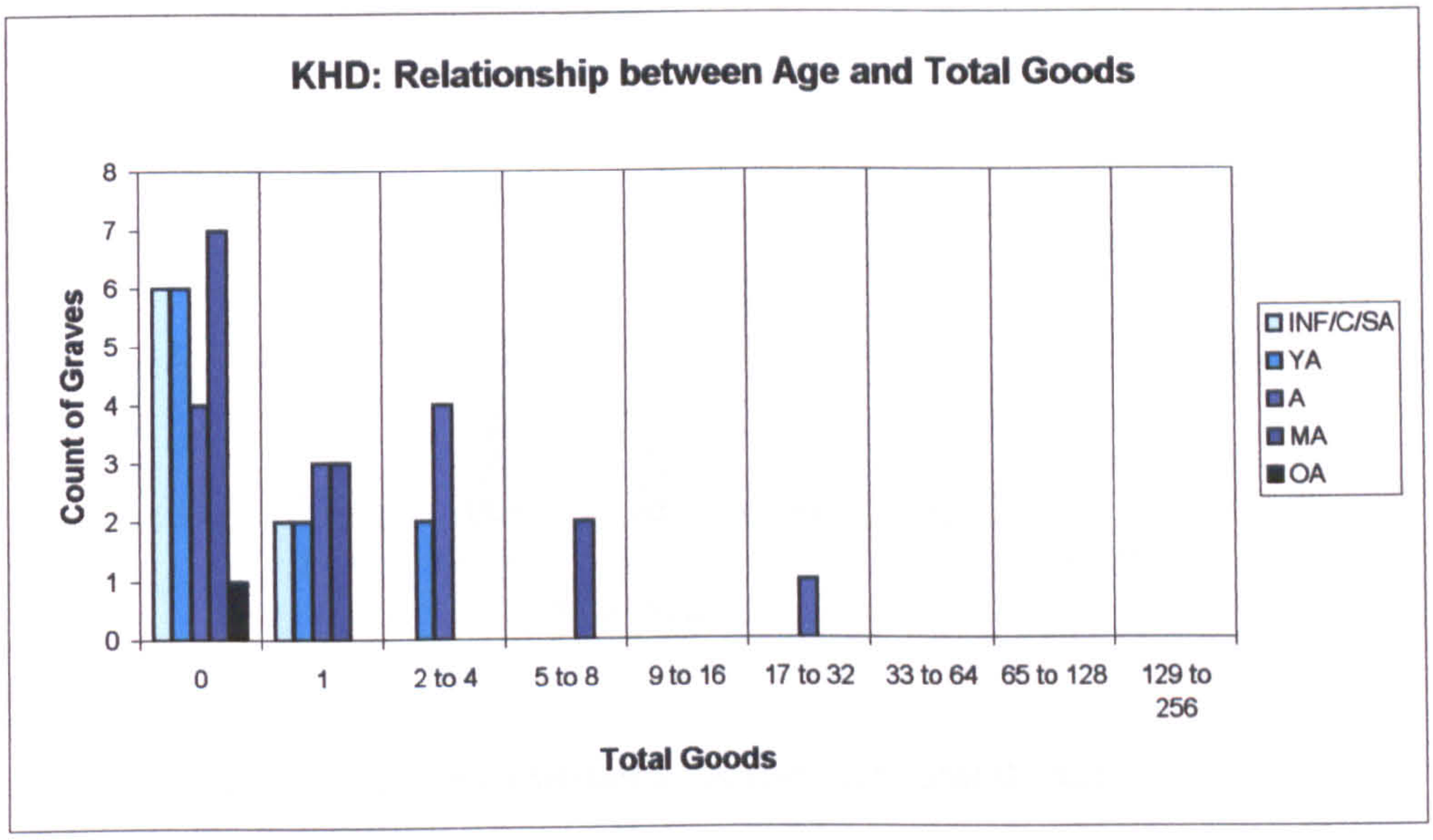


Figure 6.42: MAO Relationship between Age and Number of Types (INF/C/SA: infant/child/subadult, YA: young adult, A: adult, MA: middle-adult)



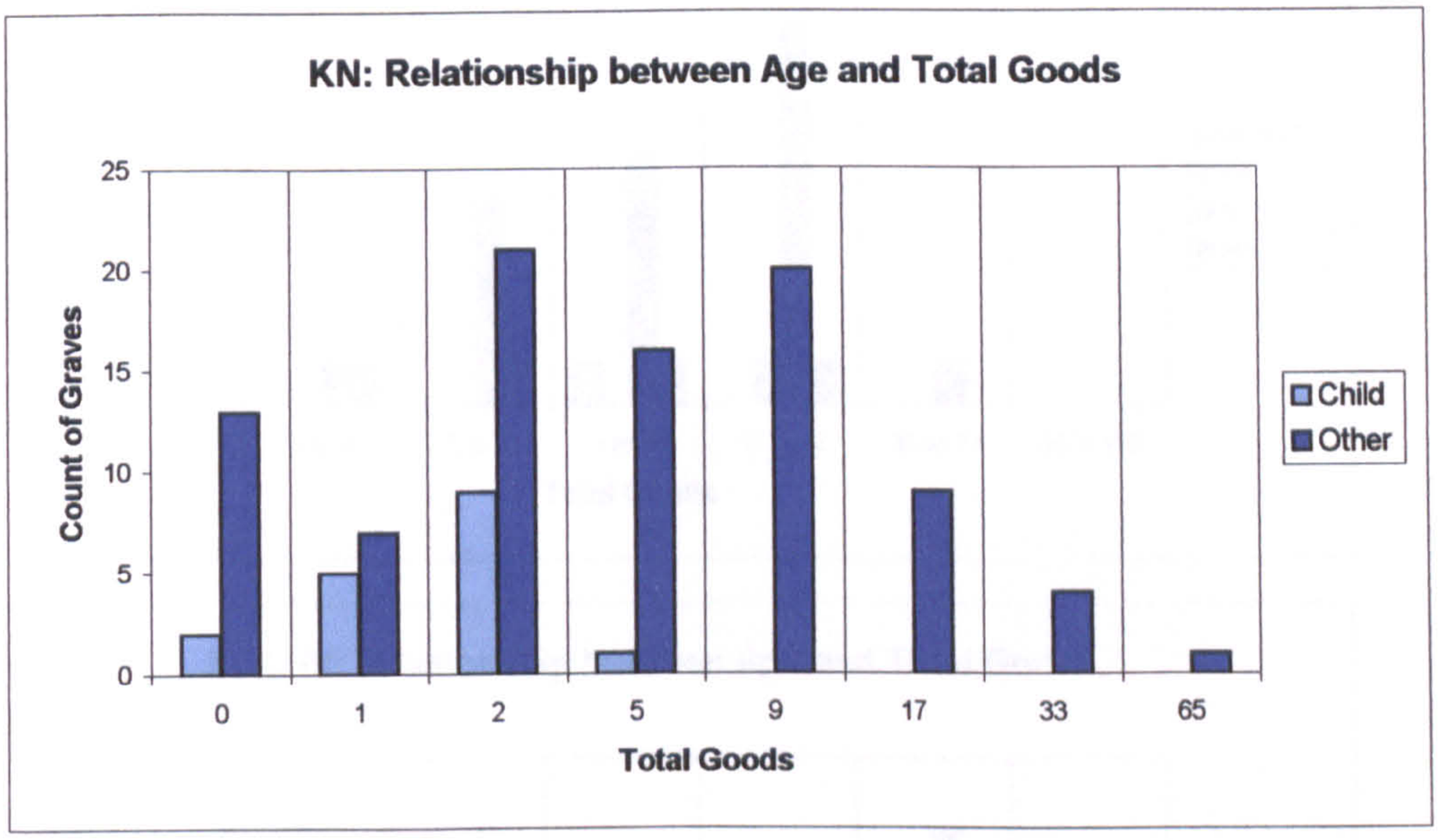
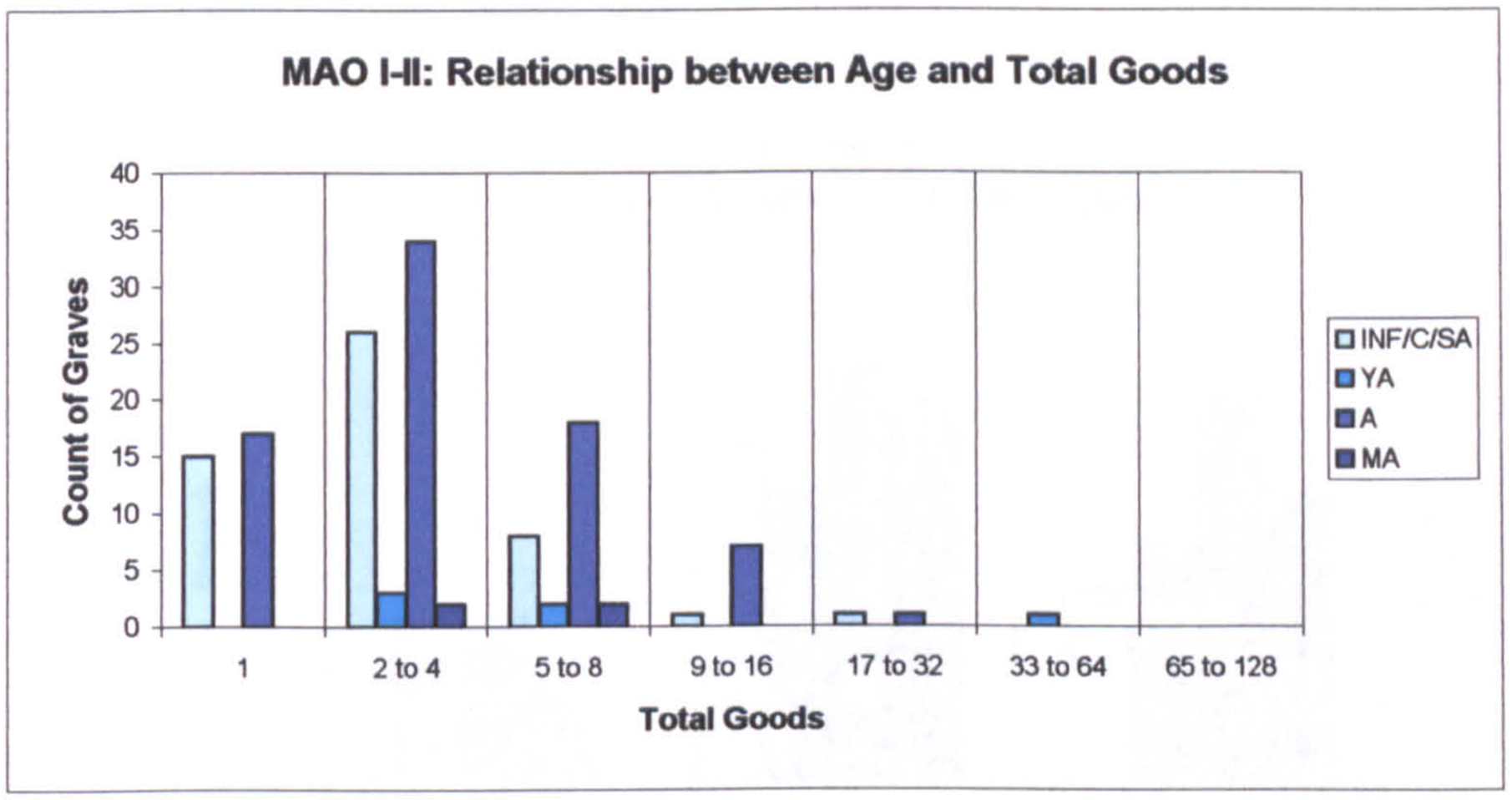
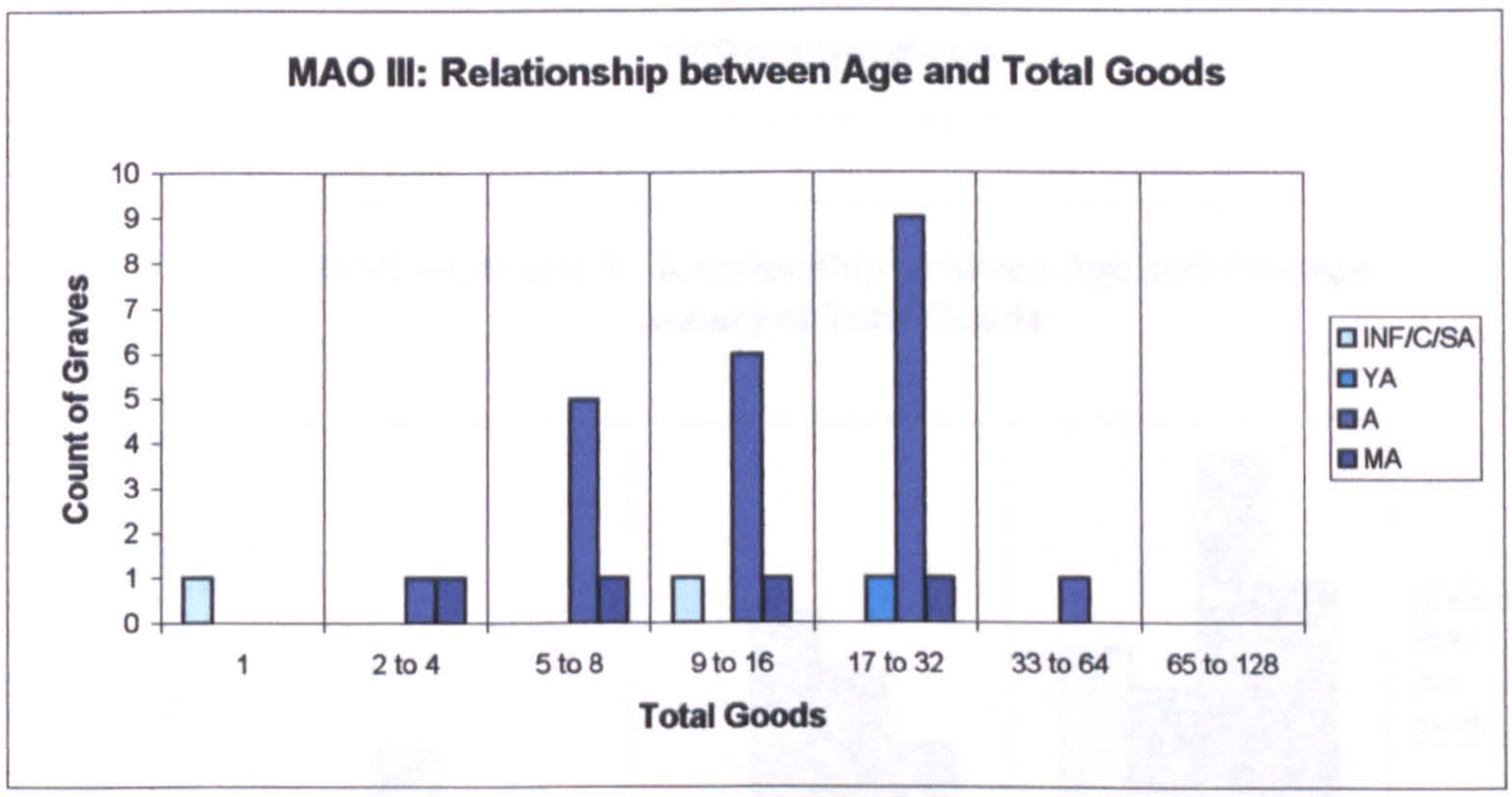


Figure 6.43: KHD and KN Relationship between Age and Total Goods (INF/C/SA: infant/child/subadult, YA: young adult, A: adult, MA: middle-adult, OA: old adult)





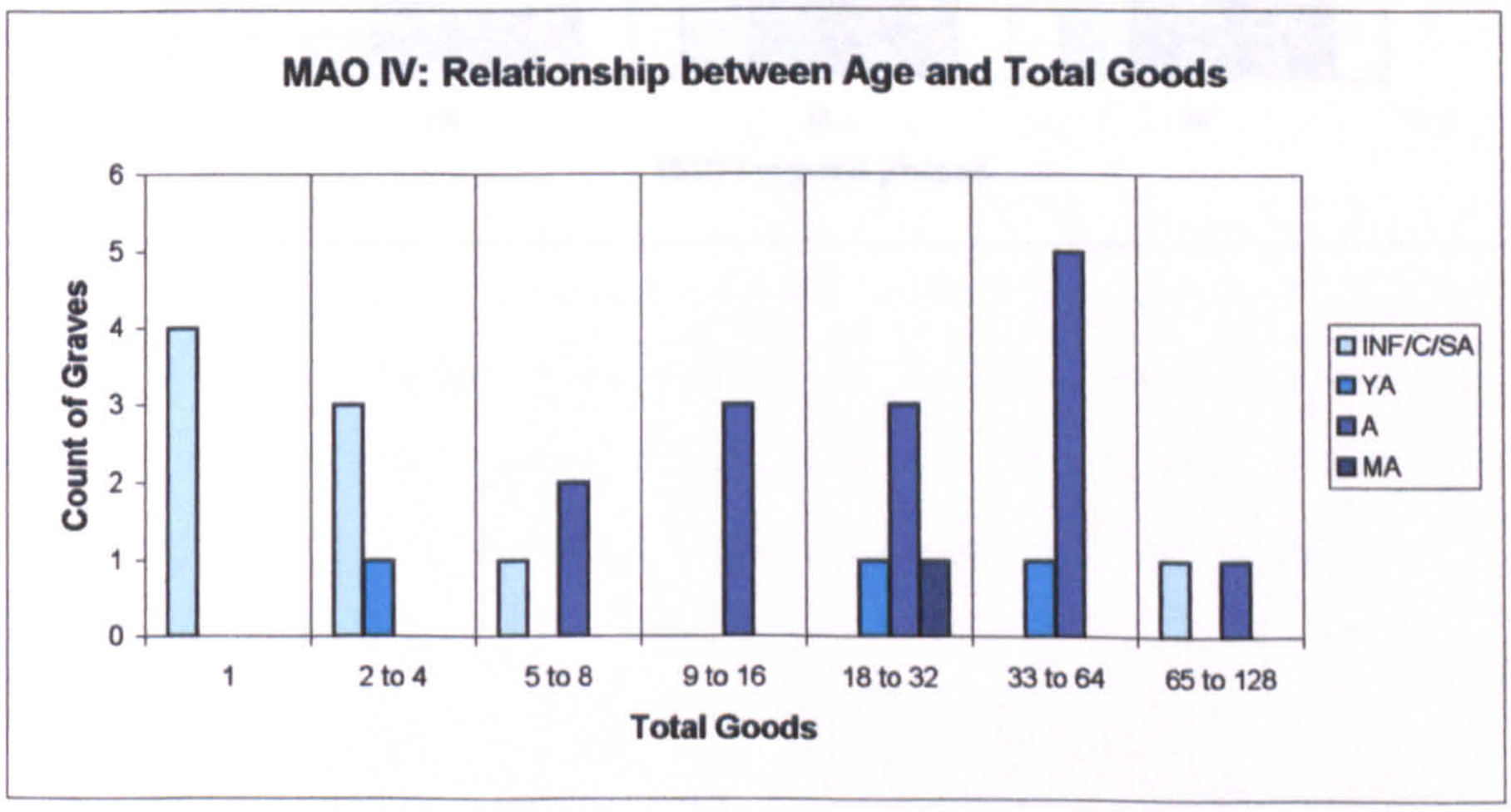
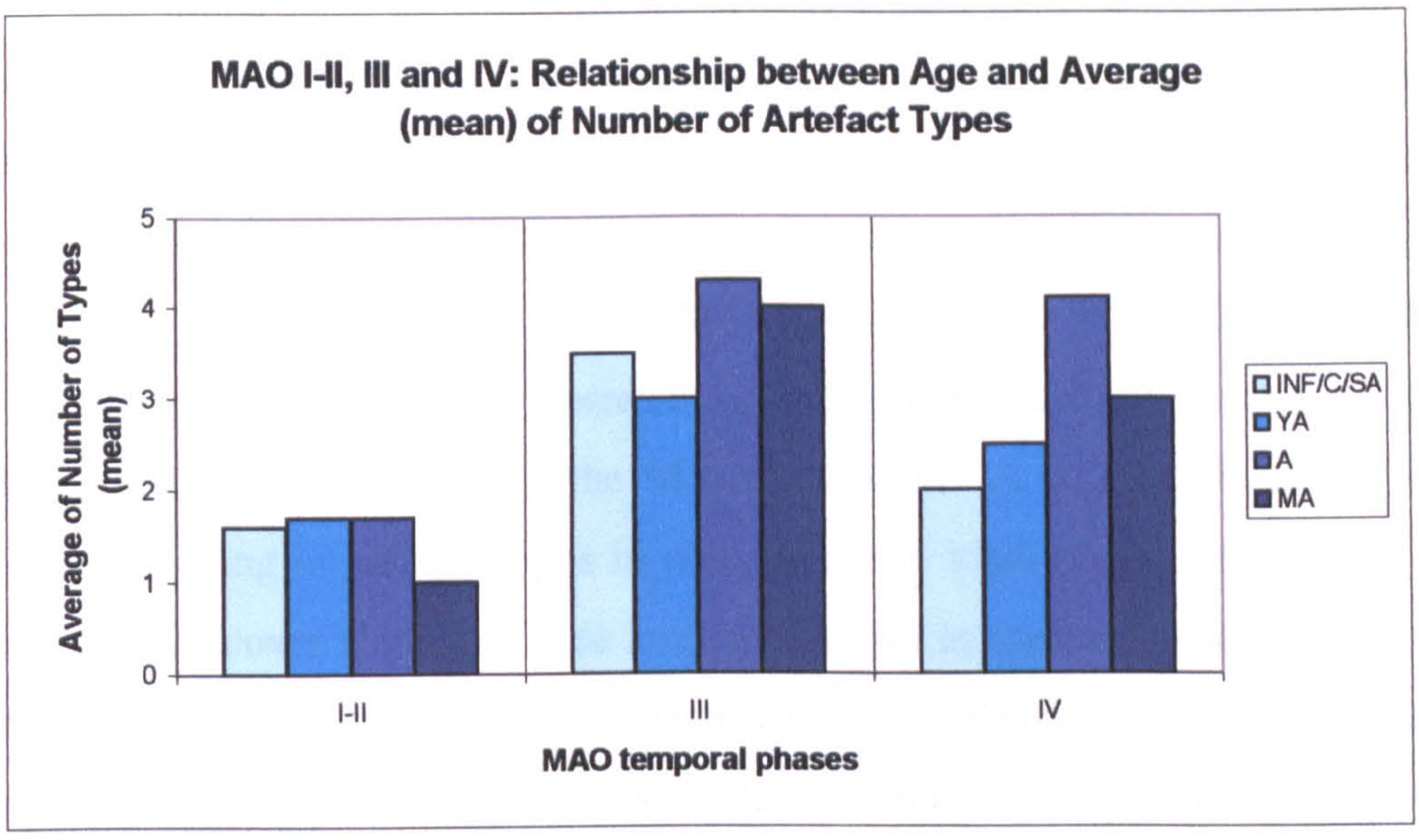


Figure 6.44: MAO Relationship between Age and Total Goods (INF/C/SA: infant/child/subadult, YA: young adult, A: adult, MA: middle-adult)



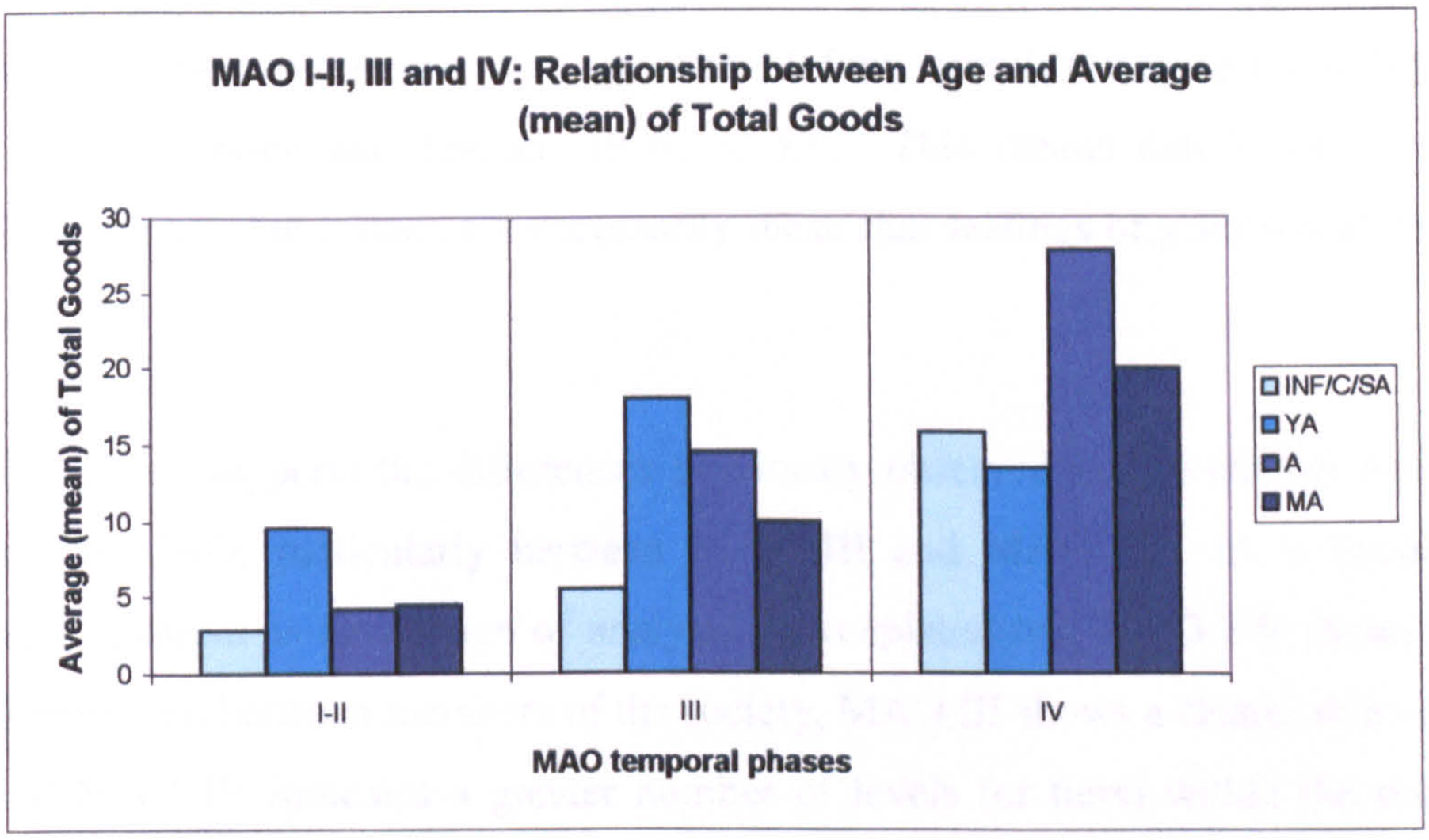
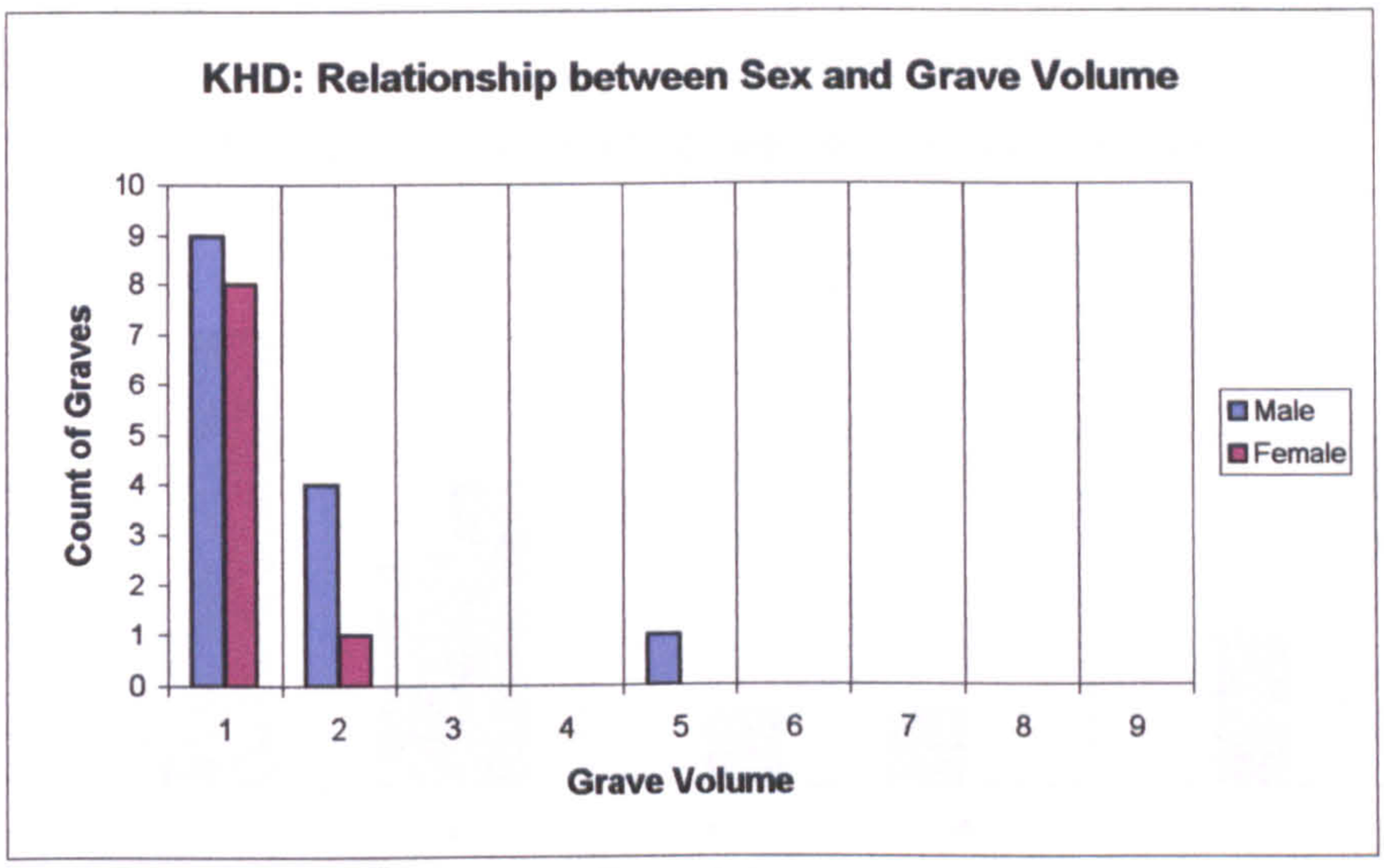
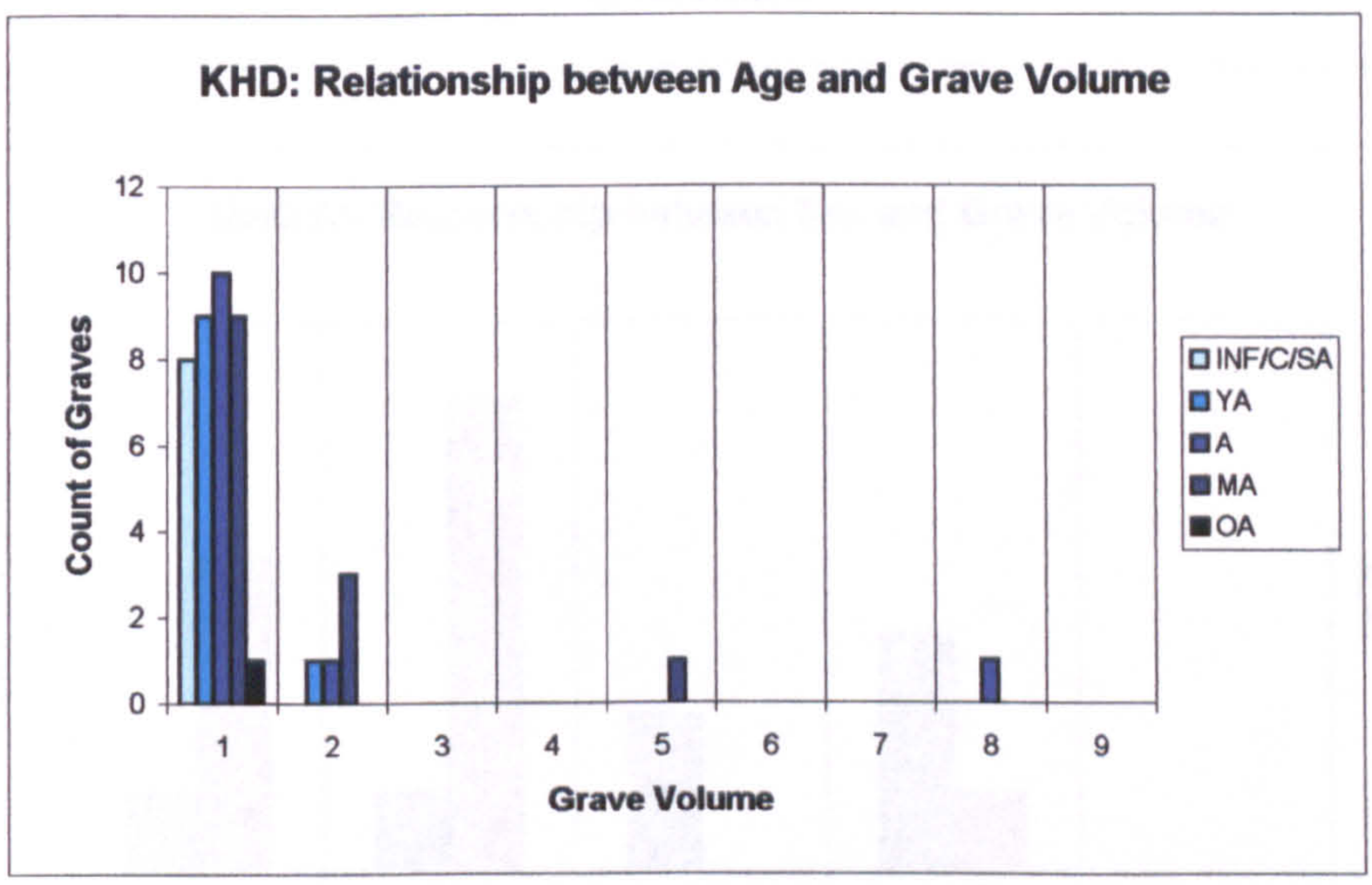


Figure 6.45: MAO Relationship between Age and Number of Types and Total Goods (Averages) (INF/C/SA: infant/child/subadult, YA: young adult, A: adult, MA: middle-adult)

That we do find some child burials well provided for, suggests that some of these individuals may either have inherited wealth or may simply represent the level of grief shown by the family at having lost children at such an early age (cf. Meskell 2000, 425). During MAO IV, grave 2275, the burial of a nine year-old child, actually represents the wealthiest burial within the entire MAO cemetery with a total of 125 grave goods spread over six types of artefact (Kroeper 1992, 134-136; cf. Adams 1987, 182; Figure 6.80). Figure 6.45 shows the averages for correlations between age and number of types and total goods over the three phases of the MAO cemetery. A slightly different pattern emerges when looking at artefact types in comparison to total goods, since while child burials consistently cover almost as wide a range of types as the main adult category this is not consistently echoed through total goods distribution. Meskell (1999, 130) discusses the extreme grief experienced over the loss of children in our modern society and, whilst not assuming that we can relay our emotions onto an earlier society, suggests that we should take our own experiences into account. Infant mortality was certainly high in Ancient Egypt (Janssen and Janssen 1996, 32-33). This means that it was a more common experience, but it does not necessarily mean that feelings of grief would be any the less.

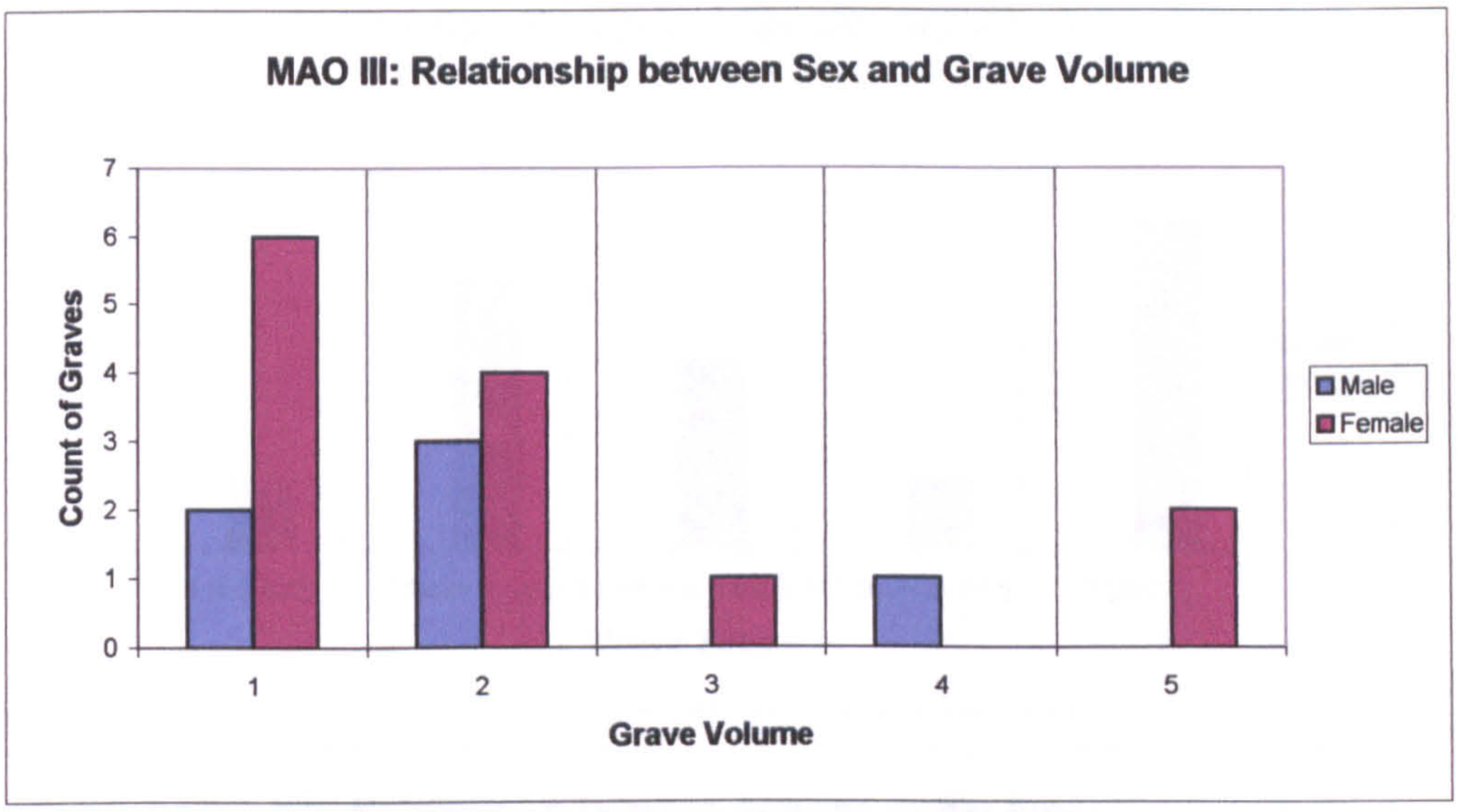
This analysis also supports the differences previously observed in this chapter between the phases at MAO, particularly between MAO III and MAO IV. It is becoming increasingly apparent as each stage of analysis is completed that MAO I-II shows very little differentiation between members of the society, MAO III shows a clearer rich – poor divide, and MAO IV indicates a greater number of levels (or tiers) within the society. While MAO IV and KHD are chronologically compatible, the decreasing frequency of adult burials as the numbers of types increases (KHD) is much more comparable to the early MAO society than the later phases. This may reveal similarity in social structure, with the majority of the population being relatively poor, and a very few individuals displaying greater wealth.

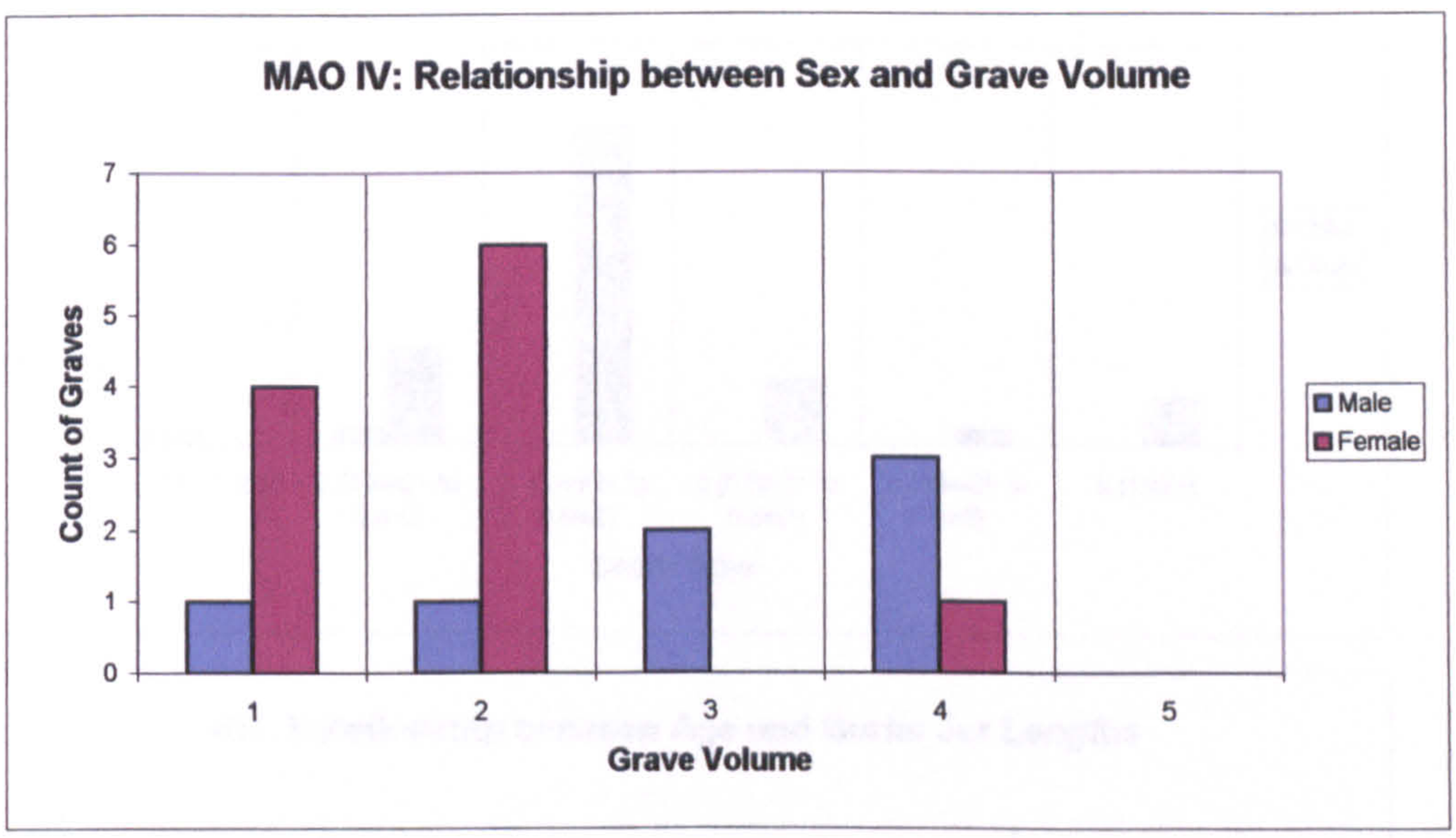




1=up to $0.5m^3$
2 = over $0.5m^3$ to $1m^3$
3 = over $1m^3$ to $2m^3$
4 = over $2m^3$ to $3m^3$
5 = over $3m^3$ to $4m^3$
6 = over $4m^3$ to $8m^3$
7 = over $8m^3$ to $12m^3$
8 = over $12m^3$ to $16m^3$
9 = over $16m^3$

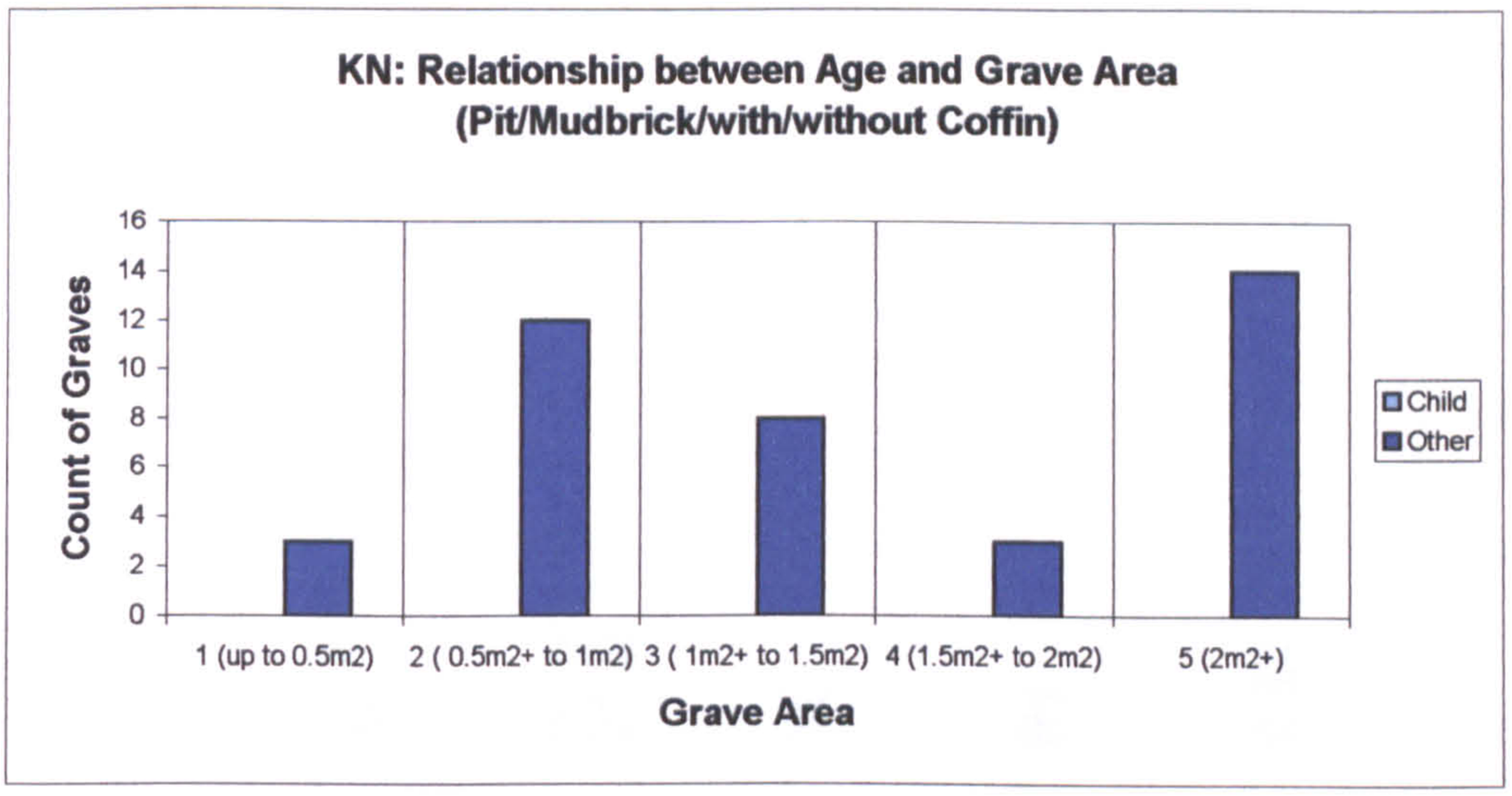
Figure 6.46: KHD Relationship between Sex and Age and Grave Size (INF/C/SA: infant/child/subadult, YA: young adult, A: adult, MA: middle-adult, OA: old adult)

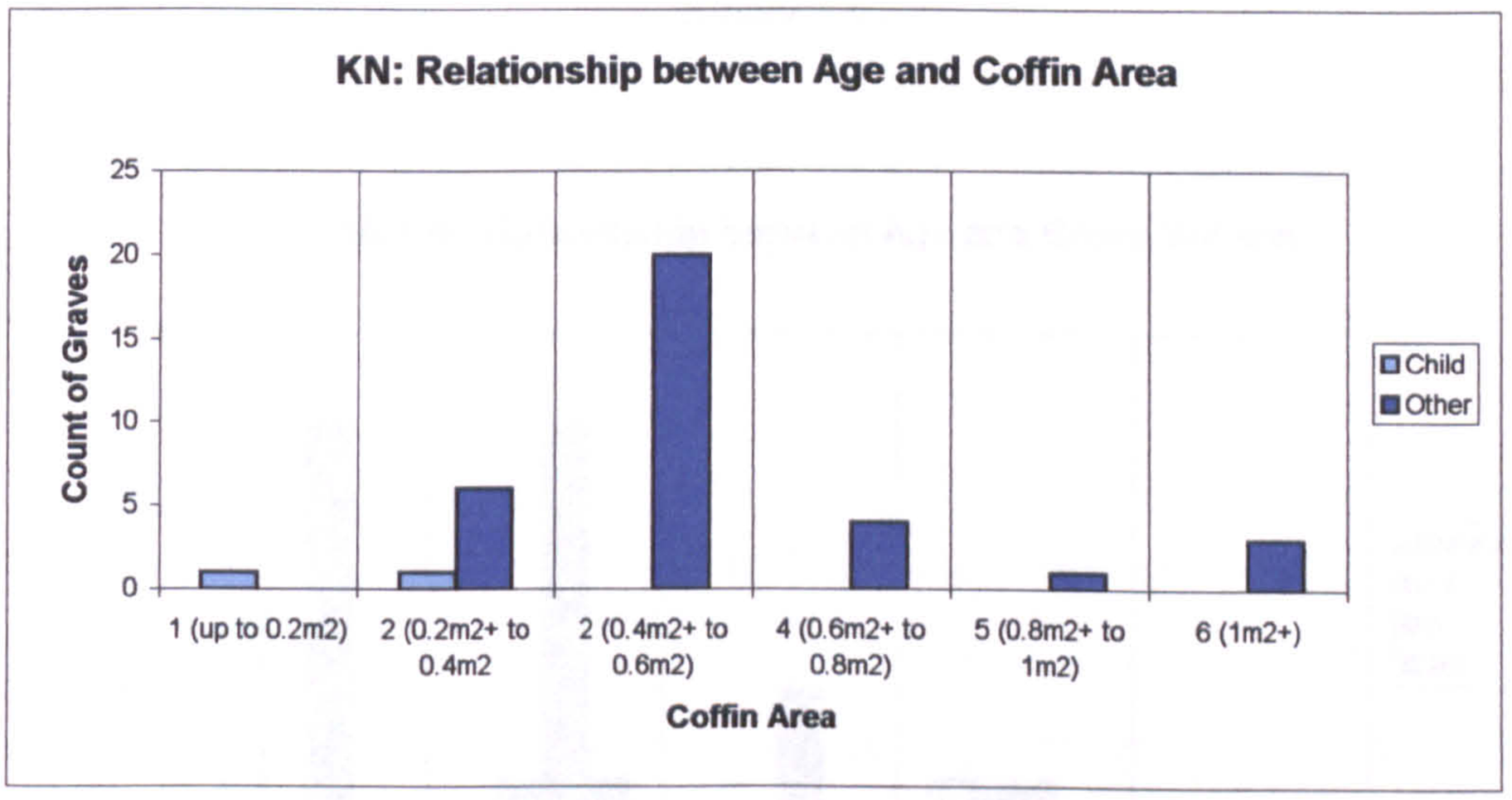




1 = up to $4m^3$
2 = over $4m^3$ to $8m^3$
3 = over $8m^3$ to $12m^3$
4 = over $12m^3$ to $16m^3$
5 = over $16m^3$

Figure 6.47: MAO Relationship between Sex and Grave Size





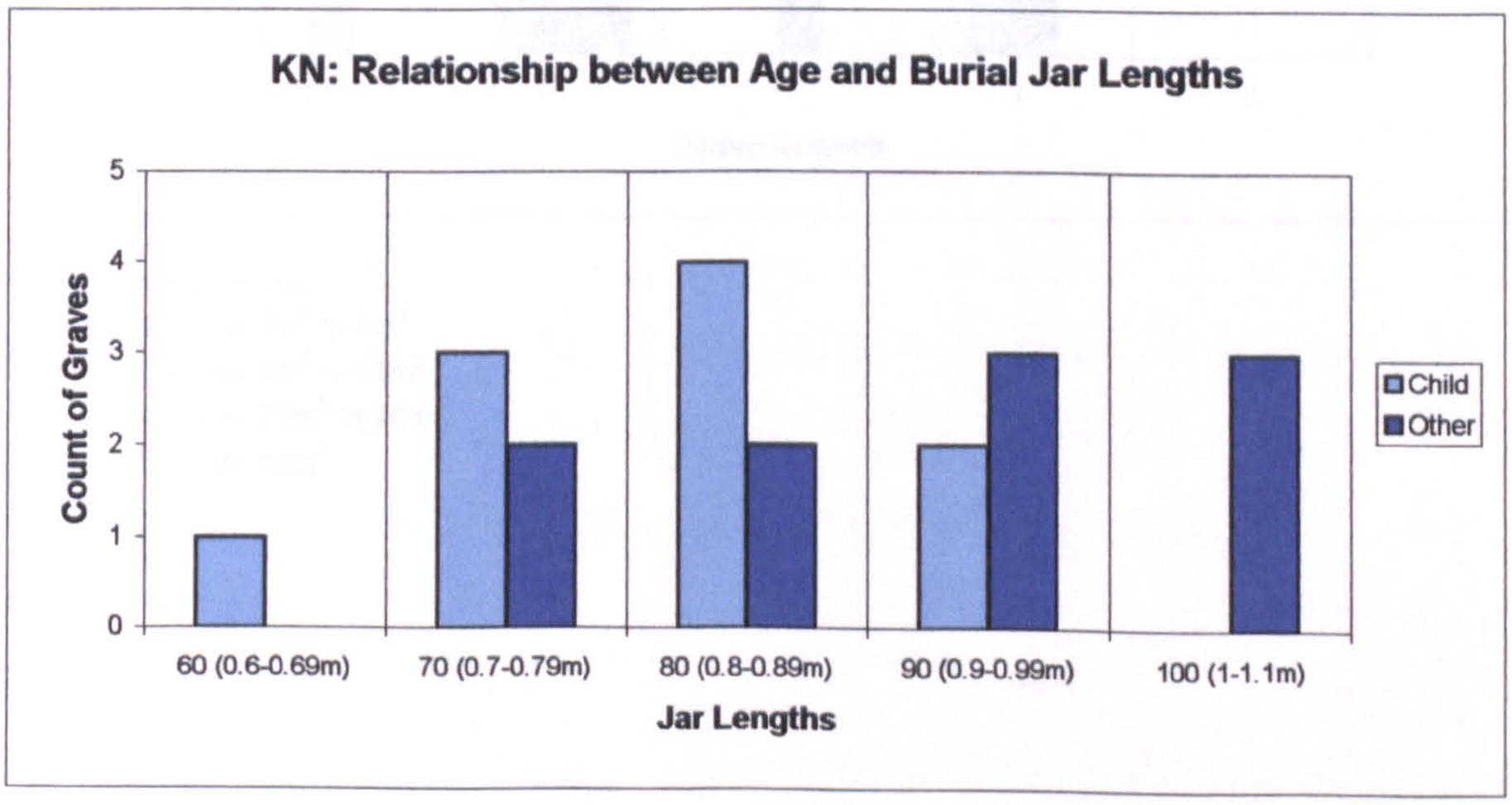
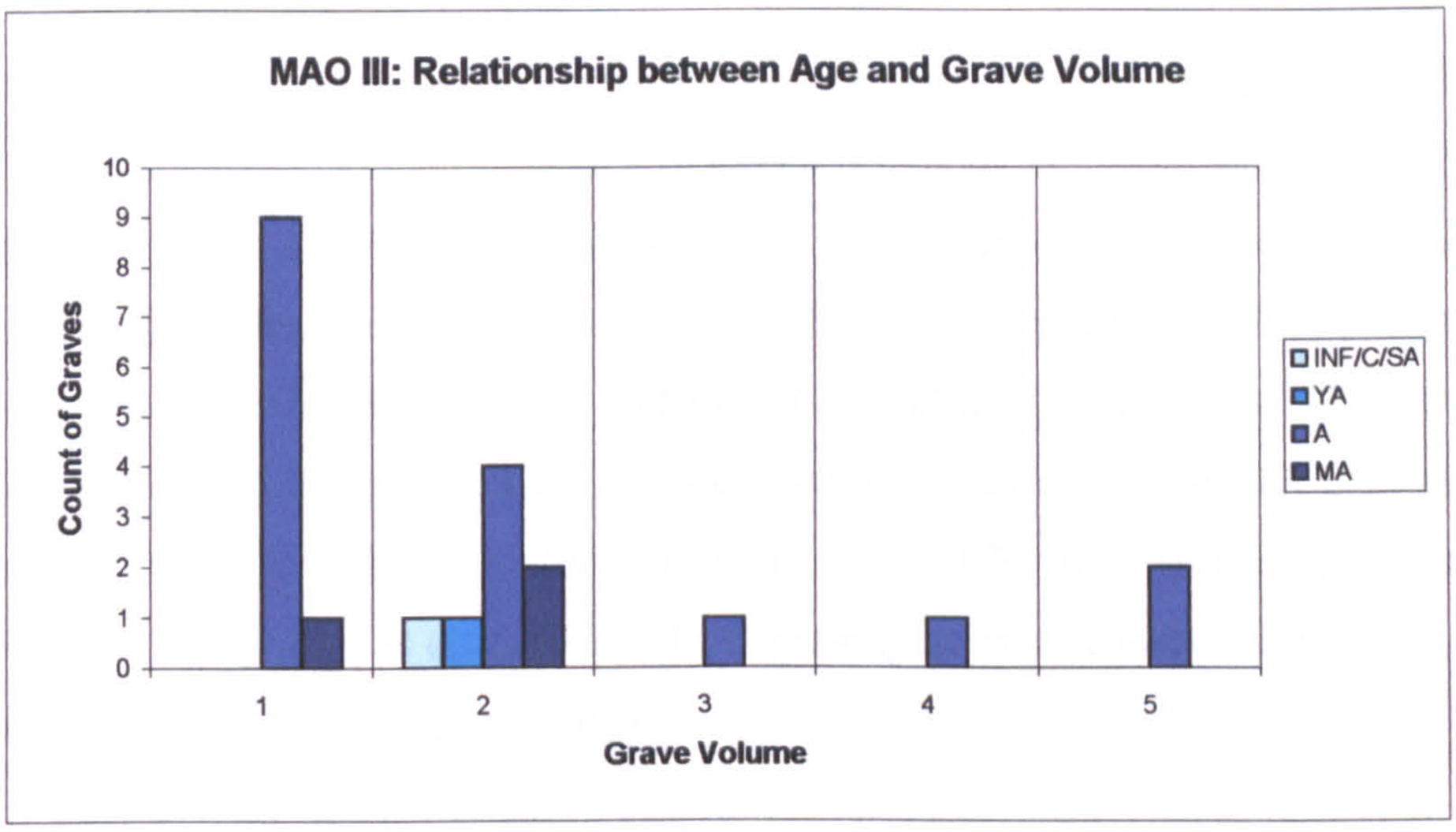
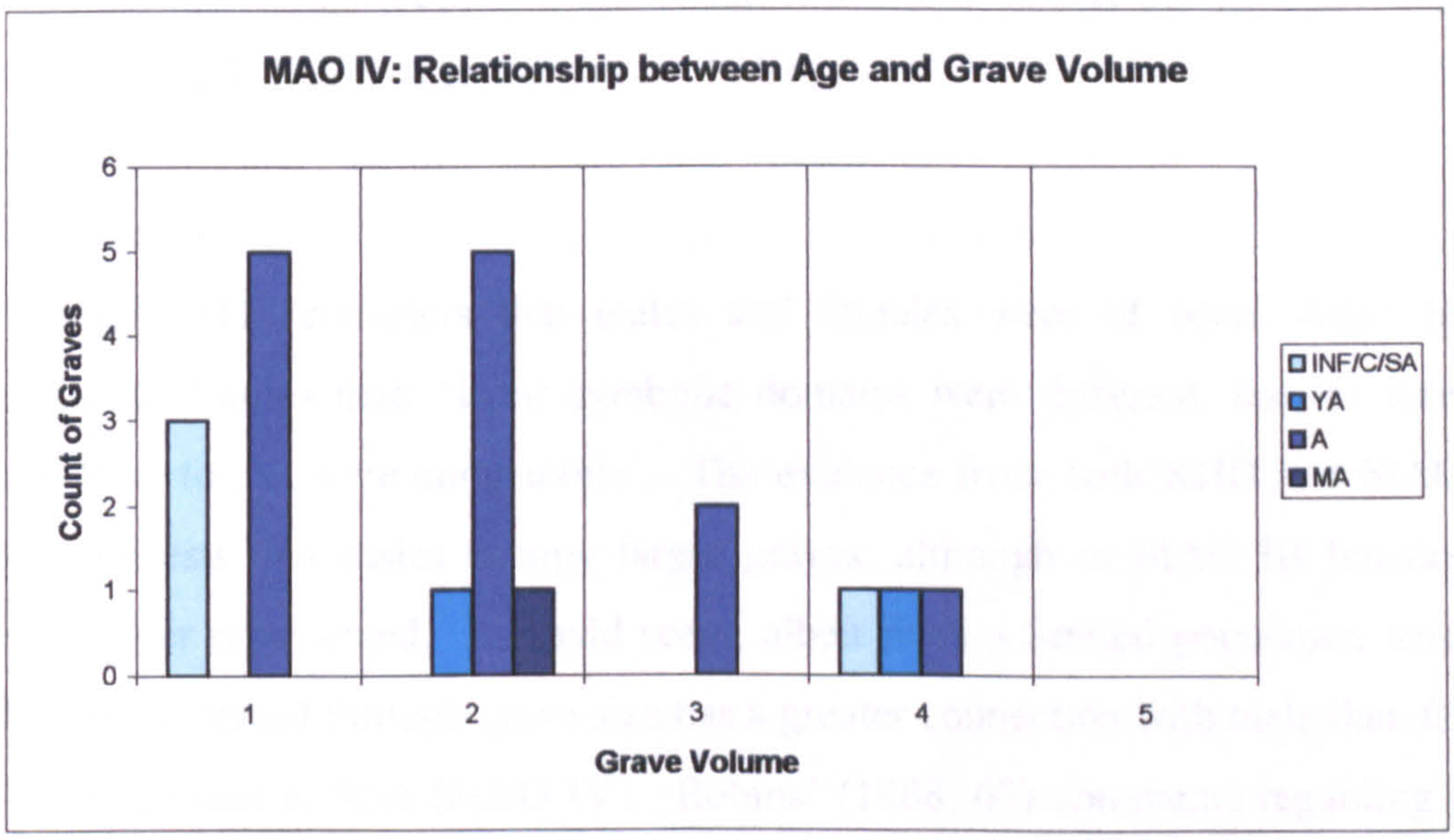


Figure 6.48: KN Relationship between Age and Grave Size





1 = up to $4m^3$
2 = over $4m^3$ to $8m^3$
3 = over $8m^3$ to $12m^3$
4 = over $12m^3$ to $16m^3$
5 = over $16m^3$

Figure 6.49: MAO Relationship between Age and Grave Size (INF/C/SA: infant/child/subadult, YA: young adult, A: adult, MA: middle-adult)

6.2.4.2 Acquired/inherited status: effort

Sex and Age: Grave Size

As in the previous section, it is only possible to consider sex as a variable in this analysis for KHD, MAO and TIA due to the lack of bioanthropological information from KN. A further complication lies in the fact that at MAO, for the earliest phase, there is a lack of data pertaining to the dimensions of the grave pits, and therefore it is only possible to carry out this analysis for phases III and IV. The multiple burials from KHD are not discussed here since grave size might be an unreliable indicator. For the analysis on age and grave size it is possible to include the burials from KN, and these are presented in three different categories, as discussed at the beginning of this chapter (Section 6.1), with internal size divisions within each of these.

It will also be interesting in the next subsection to see how closely the variables of grave size and Distance Scale relate as indicators of effort.

Males and Females

Hassan (1998, 111) considers that males and females were of equal status in the Predynastic, and notes that: 'Their symbolic domains were different, but the size and wealth of their tombs were comparable'. The evidence from both KHD and MAO IV, however, suggests that males occupy larger graves, although in MAO III females are somewhat better represented. It would seem, albeit from a limited population analysis, that effort as expressed through grave size has a greater connection with male than female graves by this point in time (MAO IV). Robins' (1988, 67) comments regarding tomb decoration may be of some import here, since later, historical scenes are 'centred on the male owner', while females rather dominate the decoration of the home with scenes of childbirth. The development to male-centred tomb decoration may, therefore, be preceded by a general increase in the size of male over female tombs.

Children and Young Adults

It is interesting to note the variation between sites in terms of child burials since their size seems quite restricted at KHD and KN, yet at MAO by the final phase, both a child and a young adult are buried in large graves (Figure 6.49). At TIA, although we are looking at

a very low number of graves, it is still worth mentioning that a young adult occupies the grave of the largest volume excavated to date (van den Brink 1992a, 51). The data from KN (Figure 6.48) indicate a link between grave type and age, rather than one between grave size and age. It is clear that the majority of confirmed child burials have been buried in ceramic jars, and that just two are confirmed as having been buried in ceramic coffins, and both in small size coffins. The mode of burial being in a coffin, however, is as likely to make a comment on the size of the individual as it is their status. The burial of just two children in coffins is notable, however, in view of Quirke's (1999, 142) comments that this mode of burial might express status (Section 6.2.3).

Adults

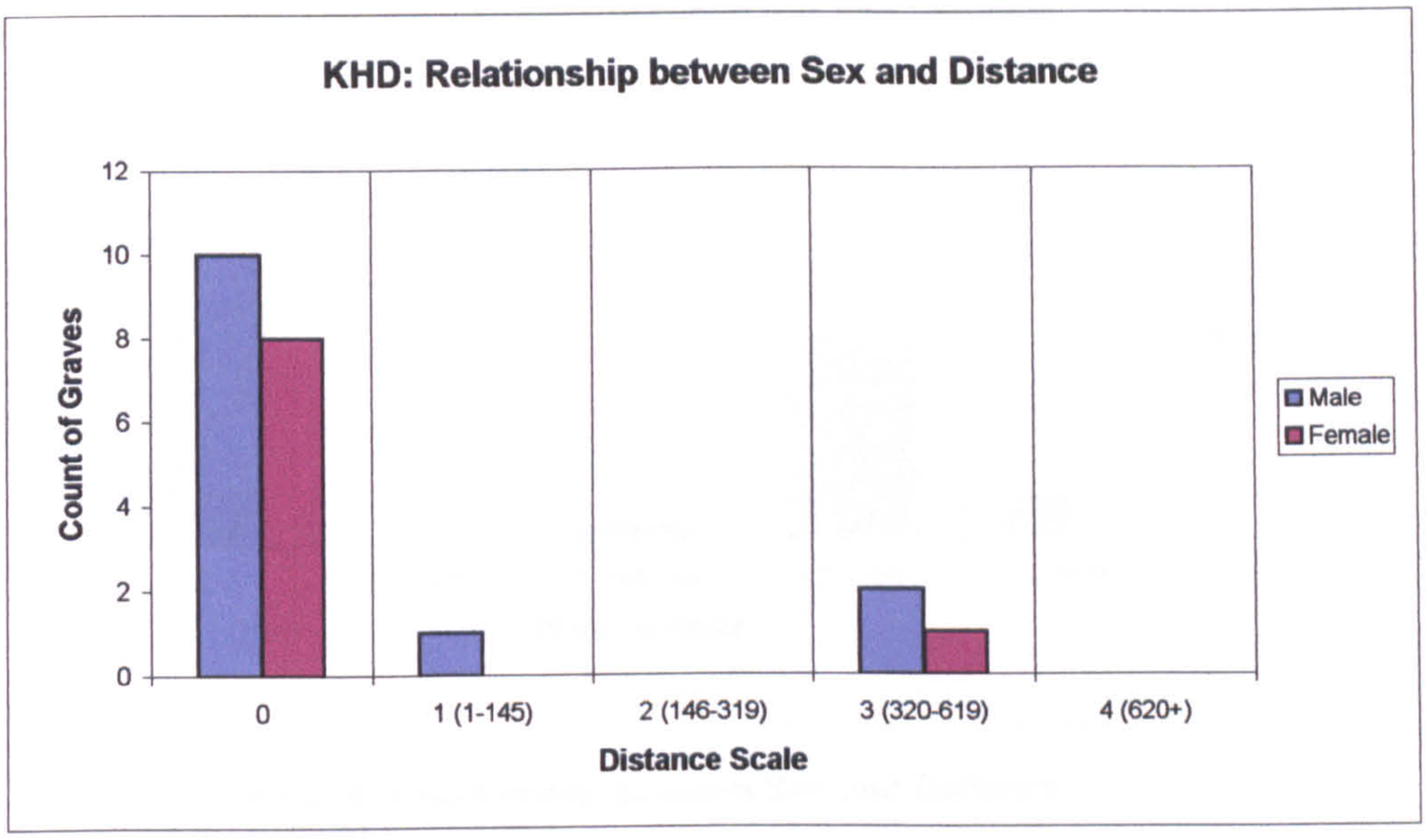
What is interesting when looking at the remainder of burials of individuals of non-confirmed age at KN, is that regardless of the type of burial the majority of pits/coffins/jar burials are not confined to the smallest sizes. In the case of pit/mudbrick/with or without a coffin, the most dominant frequency is for the largest size; for the coffin burials, the middle size dominates (which could again say more about the average size of individuals than anything else); and for the jar lengths there is really not much variation in terms of frequency as the size increases. At MAO III the largest burials are associated with adults, and at KHD adults and middle adults; by MAO IV, however, the burial of younger individuals within larger graves is evident.

Old Adults

At KHD we see that old adults occupy the same ranges as child burials (cf. MacDonald 2001, 707). The small size of grave accorded in general to old adults could be a reflection that after a certain age either a) there is no longer a need to reinforce their position through grave wealth since they are elders of the community, or perhaps, b) they have been considered too old to occupy certain positions, and actually no longer hold the importance and/or influence that enables them, or permits their family group/the community, to expend a great deal in terms of wealth and/or effort through burial (cf. MacDonald 2001, 707). While there is far from sufficient evidence to make a realistic argument concerning treatment of aged individuals, Janssen and Janssen (1996, 122-124)

comment that certainly in the Old Kingdom 'aged administrators' did retain their positions and that their posts were passed to their sons.

At MAO it is interesting that we see female burials occupying a lower proportion of the larger graves by the final phase, whereas the younger individuals within the society are occupying a greater number of larger graves. This might reflect both a change in the roles of women, which has already been discussed in Sections 6.2.2 and 6.2.3, and in the treatment of certain children and young adults. Van Gennep's (1960, 149) comments may prove useful here since he suggested that a large grave size, in addition to large number of goods, may represent an 'extended period of mourning'. Taking this into account, it is possible to infer that males were holding key positions in relation to the centralised organisation and were thus integral in the organisation of the community. In addition, through holding such positions males may have had greater access to the manpower that would have been required in order to furnish, and moreover to actually construct larger graves. The treatment of child and young adult burials suggests either that the community are increasingly expressing the inherited wealth of children through their burials, or that this show of wealth is increasingly becoming a medium through which to express the loss felt by the deceased's kinsfolk and the wider community (cf. MacDonald 2001, 707).



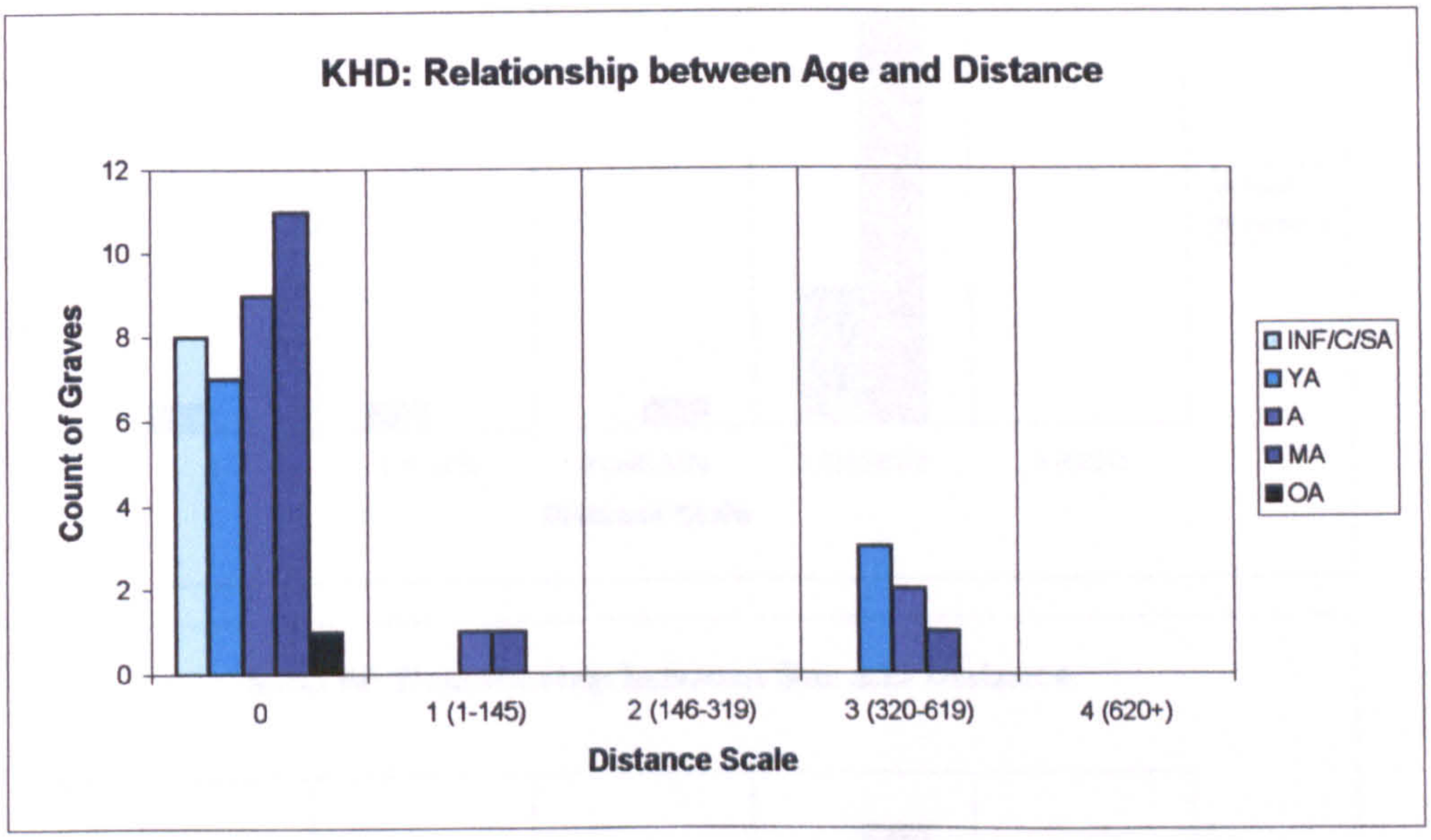
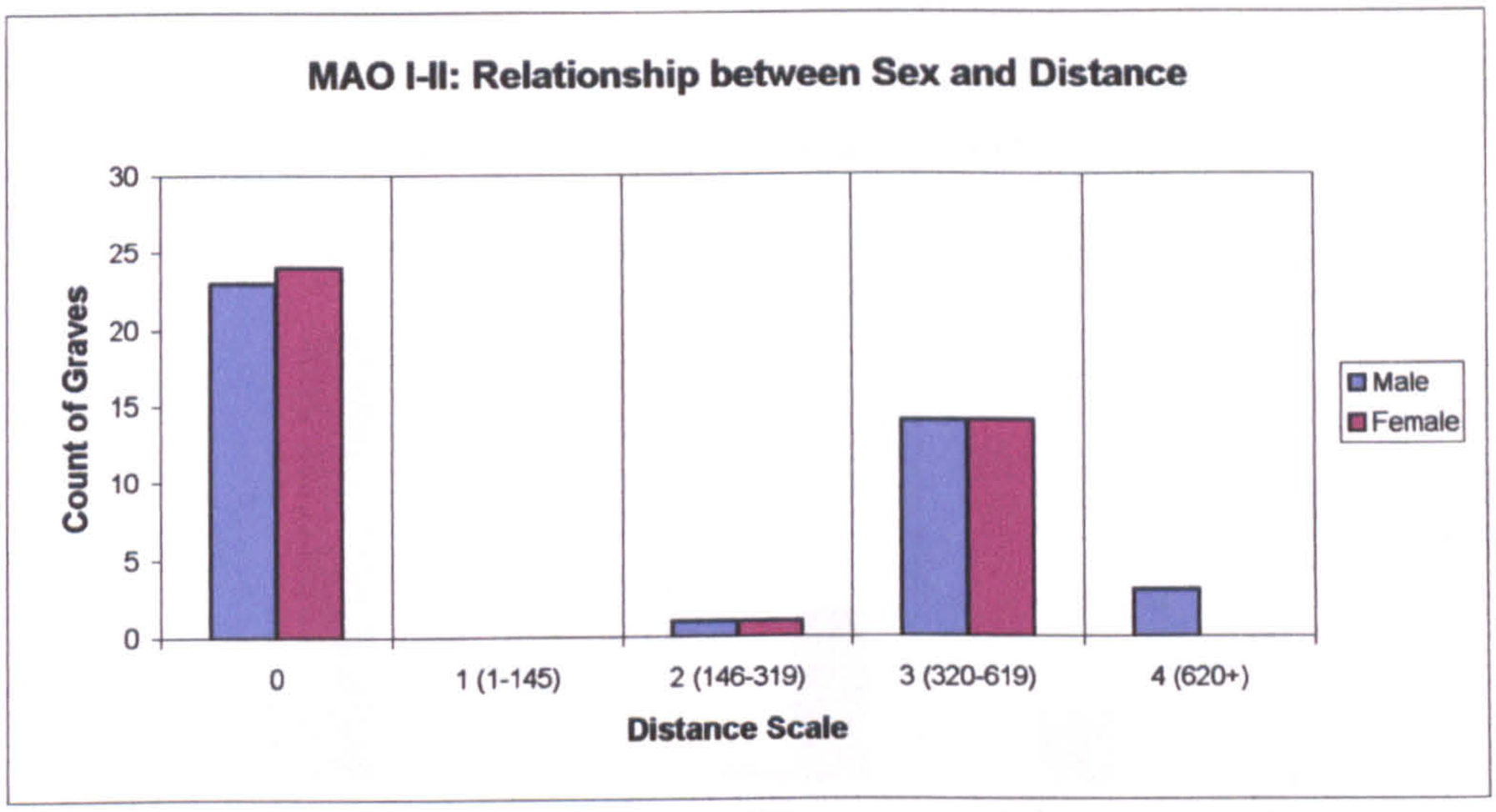
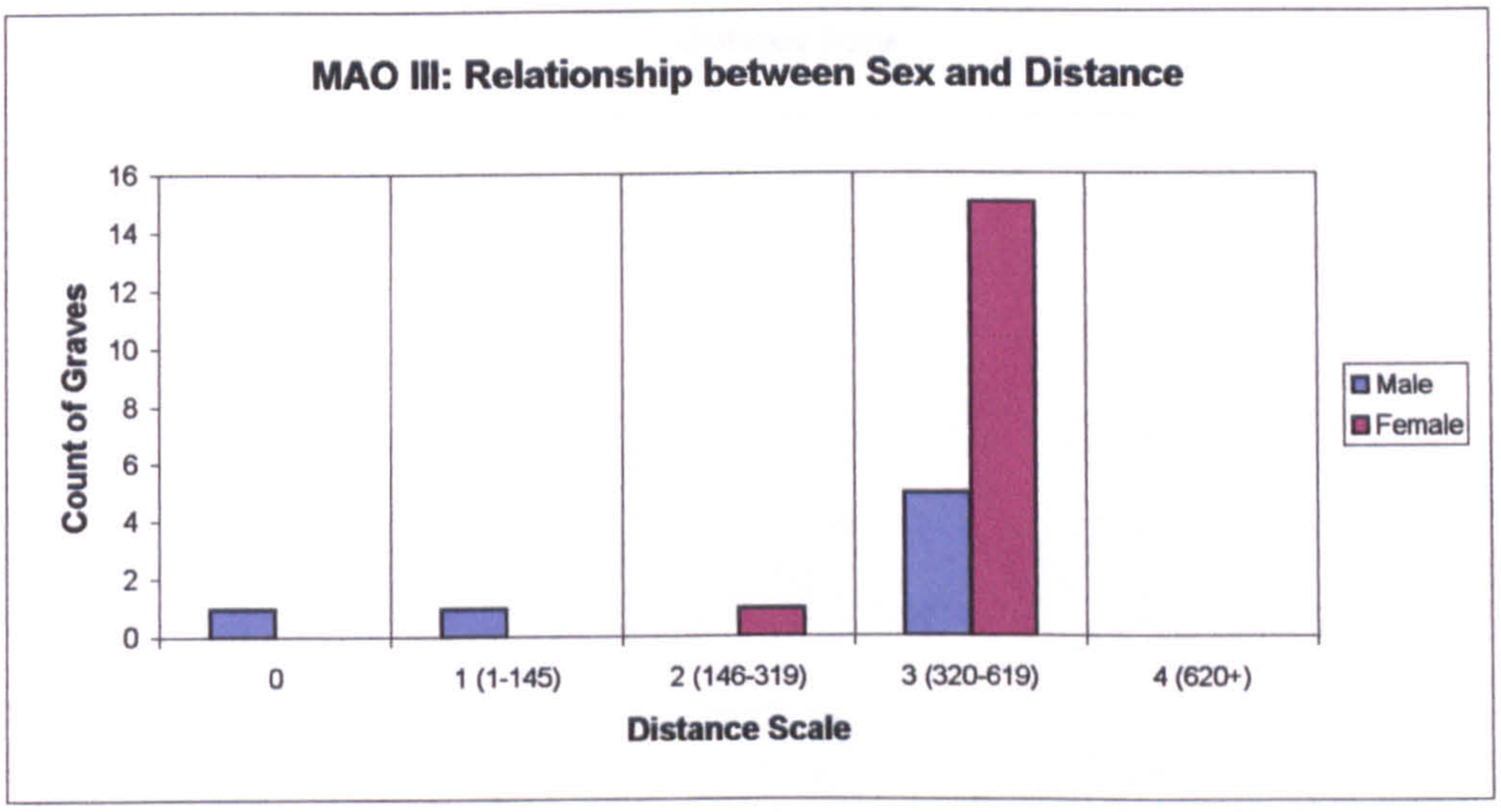


Figure 6.50: KHD Relationship between Sex and Age and Distance Scale (INF/C/SA: infant/child/subadult, YA: young adult, A: adult, MA: middle-adult, OA: old adult)





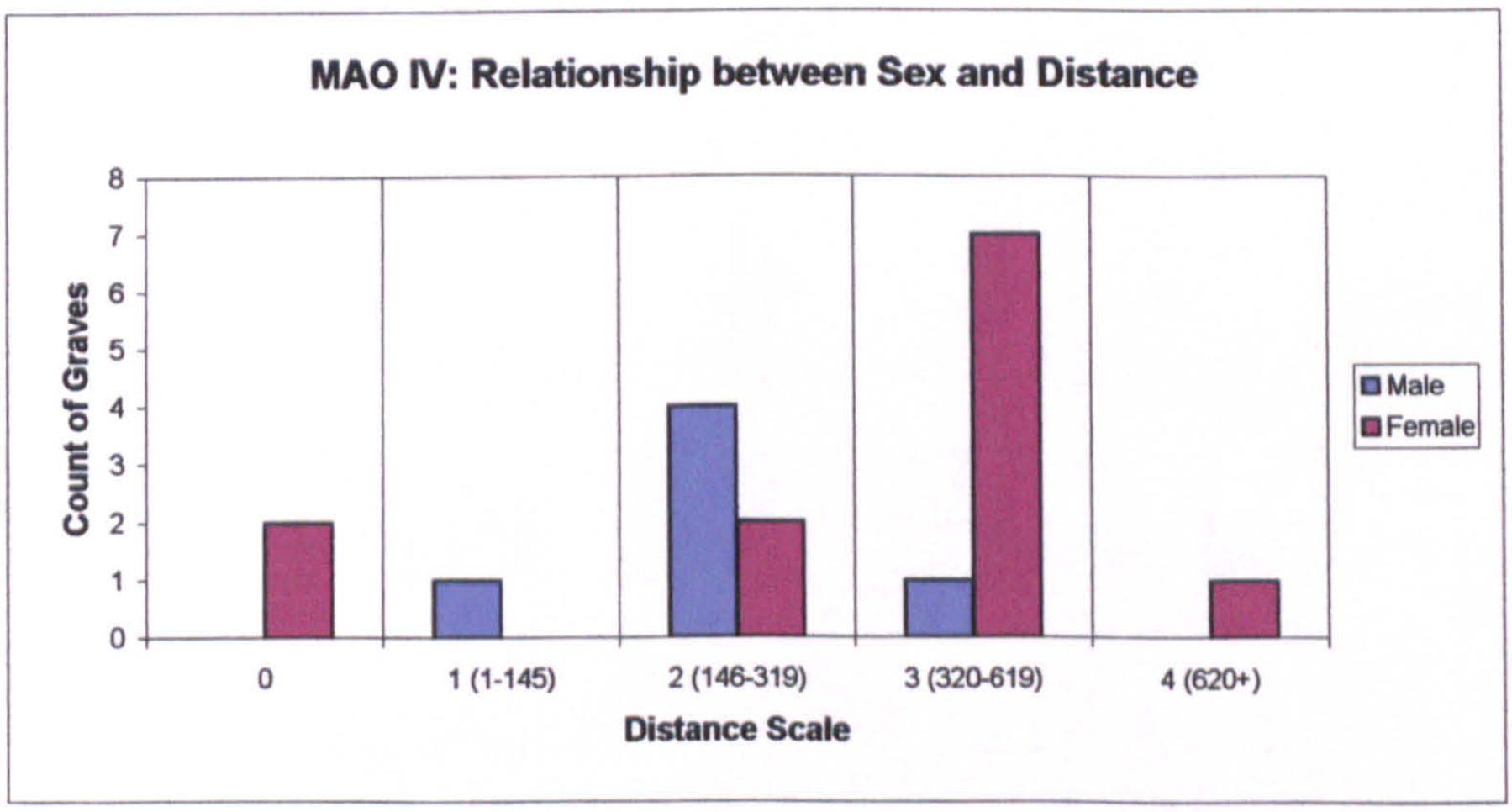


Figure 6.51: MAO Relationship between Sex and Distance Scale

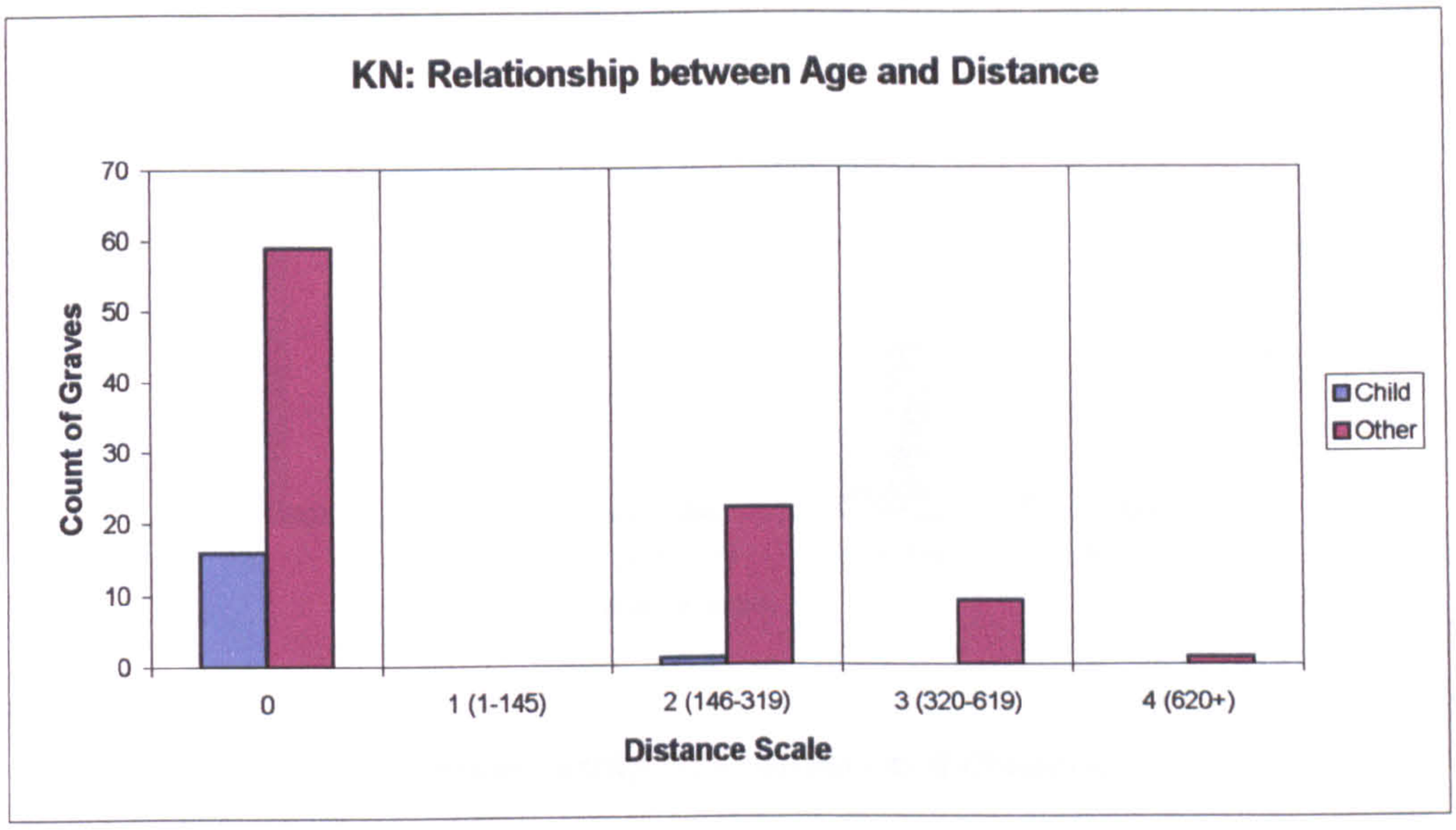
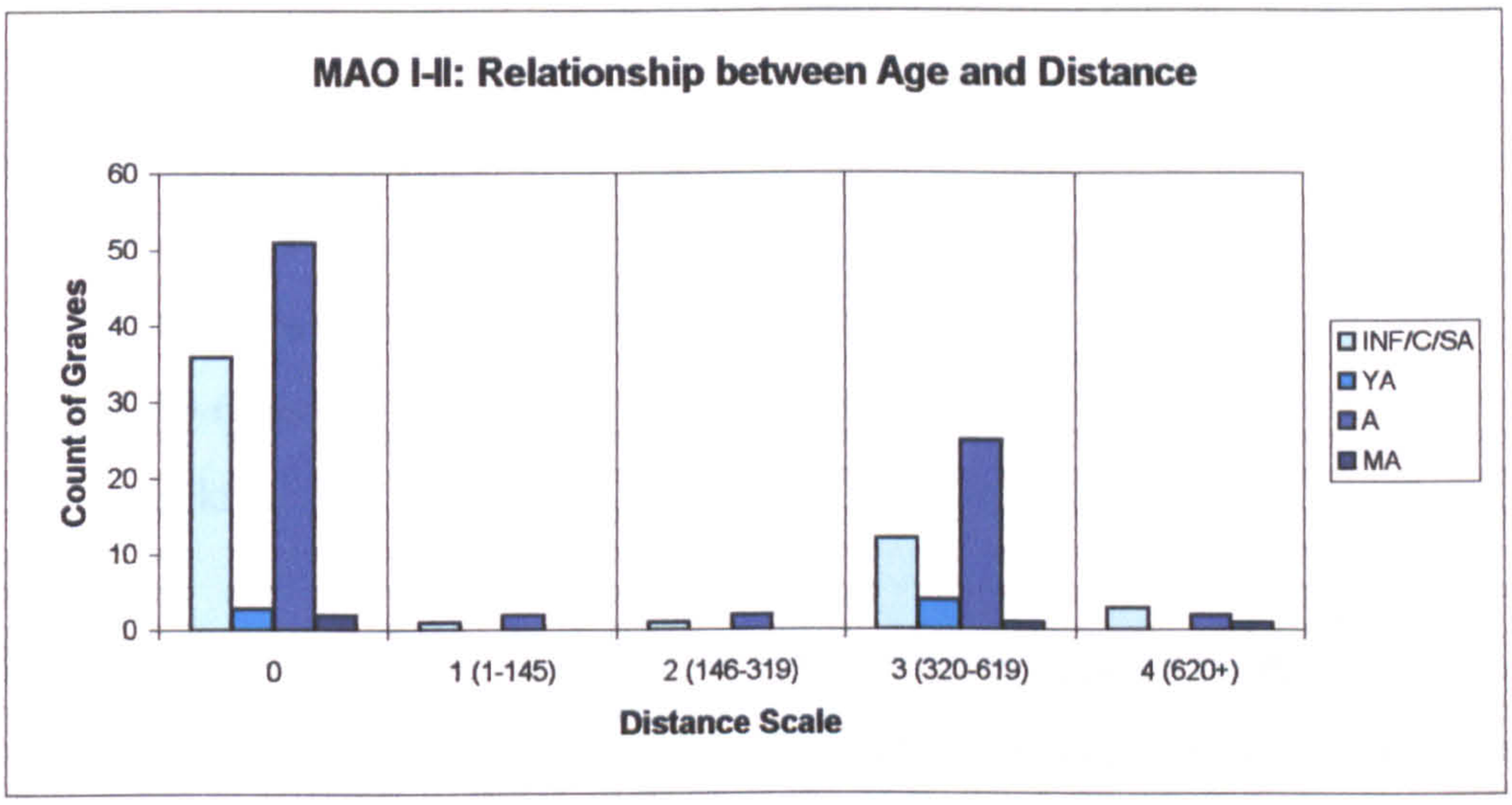
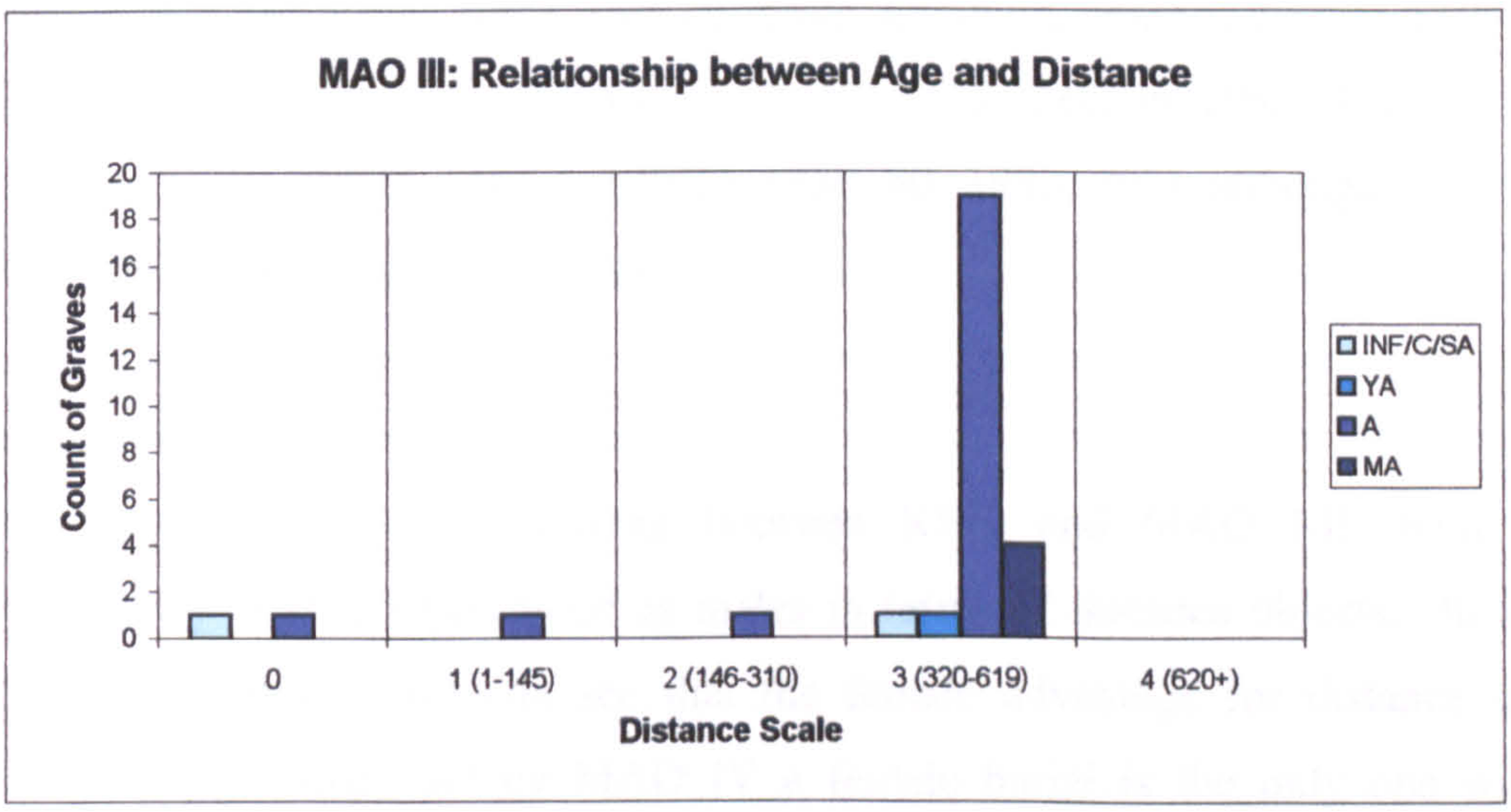


Figure 6.52: KN Relationship between Age and Distance Scale





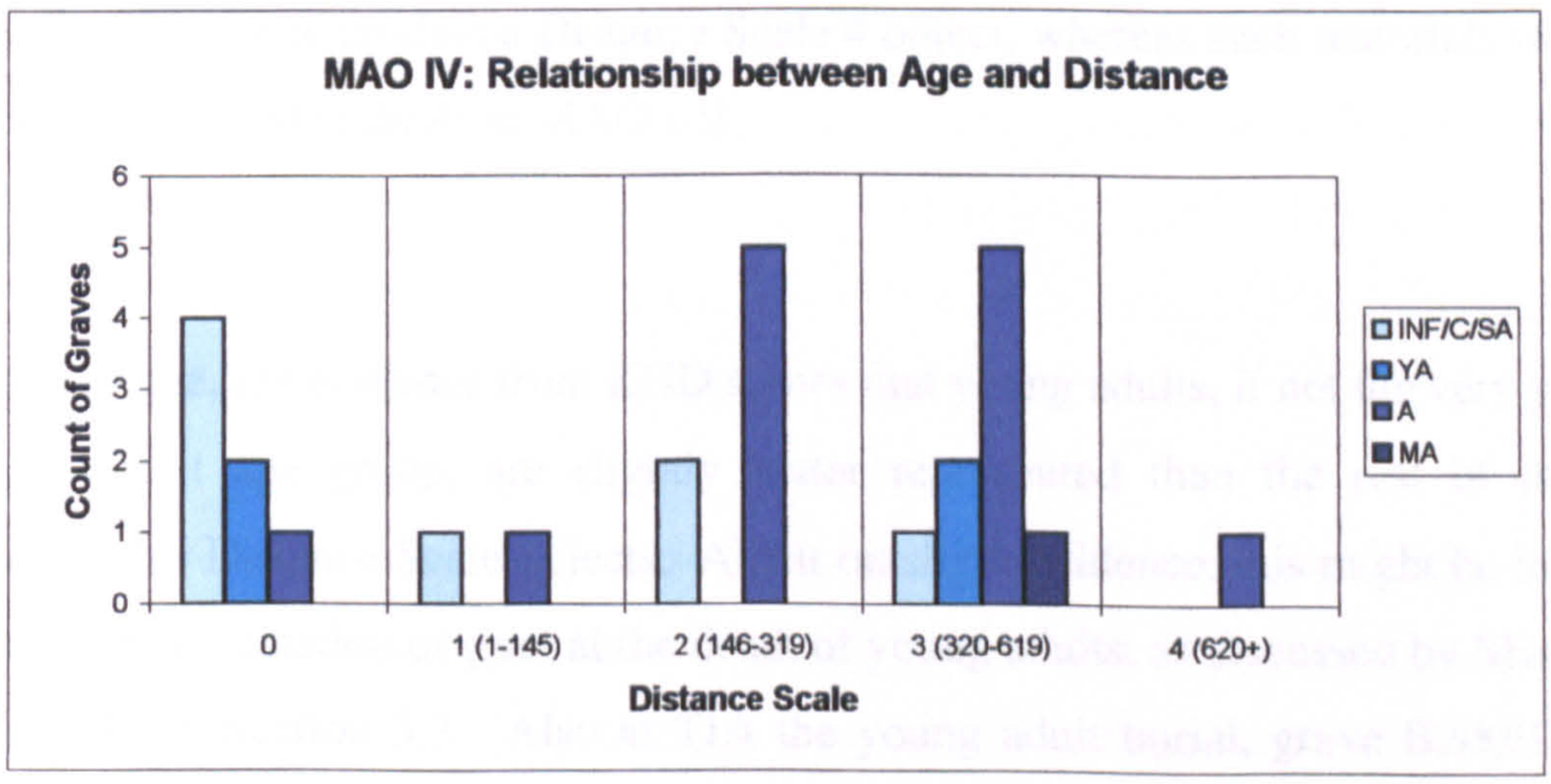


Figure 6.53: MAO Relationship between Age and Distance Scale (INF/C/SA: infant/child/subadult, YA: young adult, A: adult, MA: middle-adult)

Sex and Age: Distance Scale

The distance scale (see Section 4.3.1-2) is recorded on a zero to four scale, with the distances represented as follows:

1: 1-145km

2: 146-319km

3: 320-619km

4: 620km+

At MAO, about 1% of the ceramic vessels are classed as imports on the basis of 'the form and clay matrix' being 'clearly not produced in Egypt' (Kroeper 1987, 78; Kroeper 1989). The majority of the pieces come from Palestine, although, pending further analysis, four may come from Nubia (Kroeper 1987, 78; 1988, 15; Leclant 1983, 472). There are imported ceramics at TIA (van den Brink 1988, 80; 1993, 297), although at KHD there are very few imported vessels present.

Males and Females

Similarities are once again striking between KHD and MAO I-II, with females proportionately as well represented as males in terms of distance objects. In addition, looking at Figure 6.51 we can see that the female advantage for distance materials increases through time, and by MAO IV a female burial is the only one within the population sample to contain a Distance Scale 4 object, whereas such materials were only associated with male burials in MAO I-II.

Age

In terms of age, the evidence from KHD shows that young adults, if not the very youngest nor the eldest age group, are slightly better represented than the rest of the adult population for Distance Scale objects. Albeit on slight evidence, this might be indicative of greater representation of grief at the death of young adults, as discussed by MacDonald (2001, 706) in Section 3.3. Also at TIA the young adult burial, grave B200/170 1, is associated with a number of distance objects (all types of stone), the furthest being of Distance Scale 3, only equalled in one of the other graves at TIA (van Haarlem 1998a, 18). The evidence from MAO I-II and IV shows clearly that the younger age burials

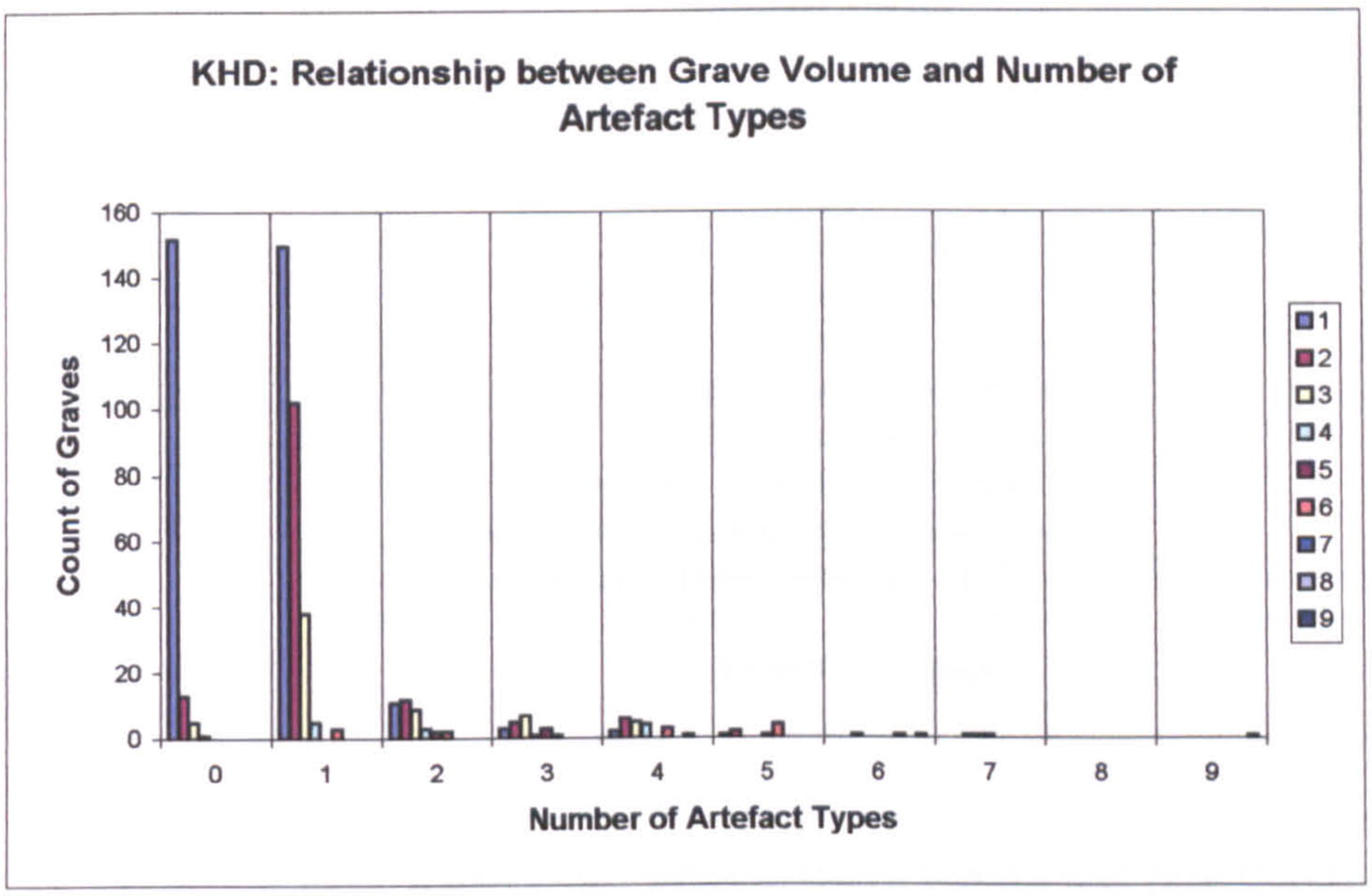
appear to have a wide range of different material types from distant sources (Figure 6.53). In MAO III, however, although the situation is less clear, with the child and young adult groups being less well represented within the sample population, they are still associated with one grave apiece of Distance Scale 4 (Figure 6.53). By MAO IV it is notable that only adults fall within the highest Distance Scale category, the only child burial in this category having been in MAO I-II. Unfortunately, little can be said from the KN material, only that there is one confirmed instance of a child burial with material from Distance Scale 2 (Figure 6.52).

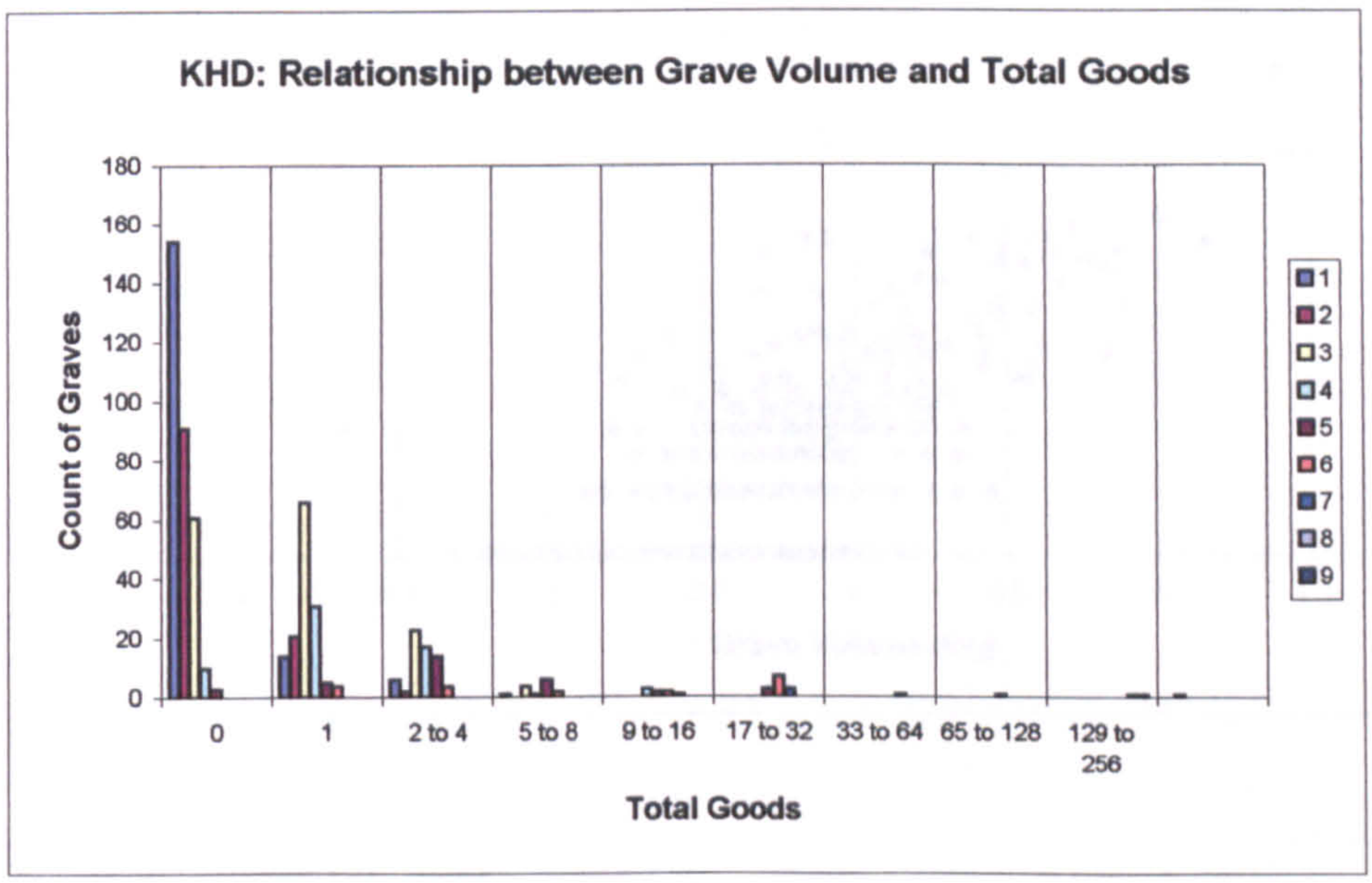
Effort Expenditure

In terms of considering both distance objects and grave size as indicators of effort, it is interesting to see quite different patterns emerging, which stresses the importance of experimenting with alternative variables. As a sole indicator of effort, grave size analysis reveals that males occupy larger graves at KHD, and begin to do so by the final phase at MAO. Incorporating the presence of distance objects as another indicator, however, we find that females fare at least as well as males, and through time (MAO IV) appear to be better represented.

Looking at age groups, distance objects suggest that young adults have a slightly better representation than the rest of the population. At KHD, however, they are not associated with the largest grave sizes in this cemetery. In MAO, with the advantage of observing the temporal divisions we can see that in MAO III young adults and children have fairly small graves, but are well represented by distance objects, yet by MAO IV we see the reverse, that while only adults have the furthest distance scale objects, children, young adults and adults occupy equally large graves.

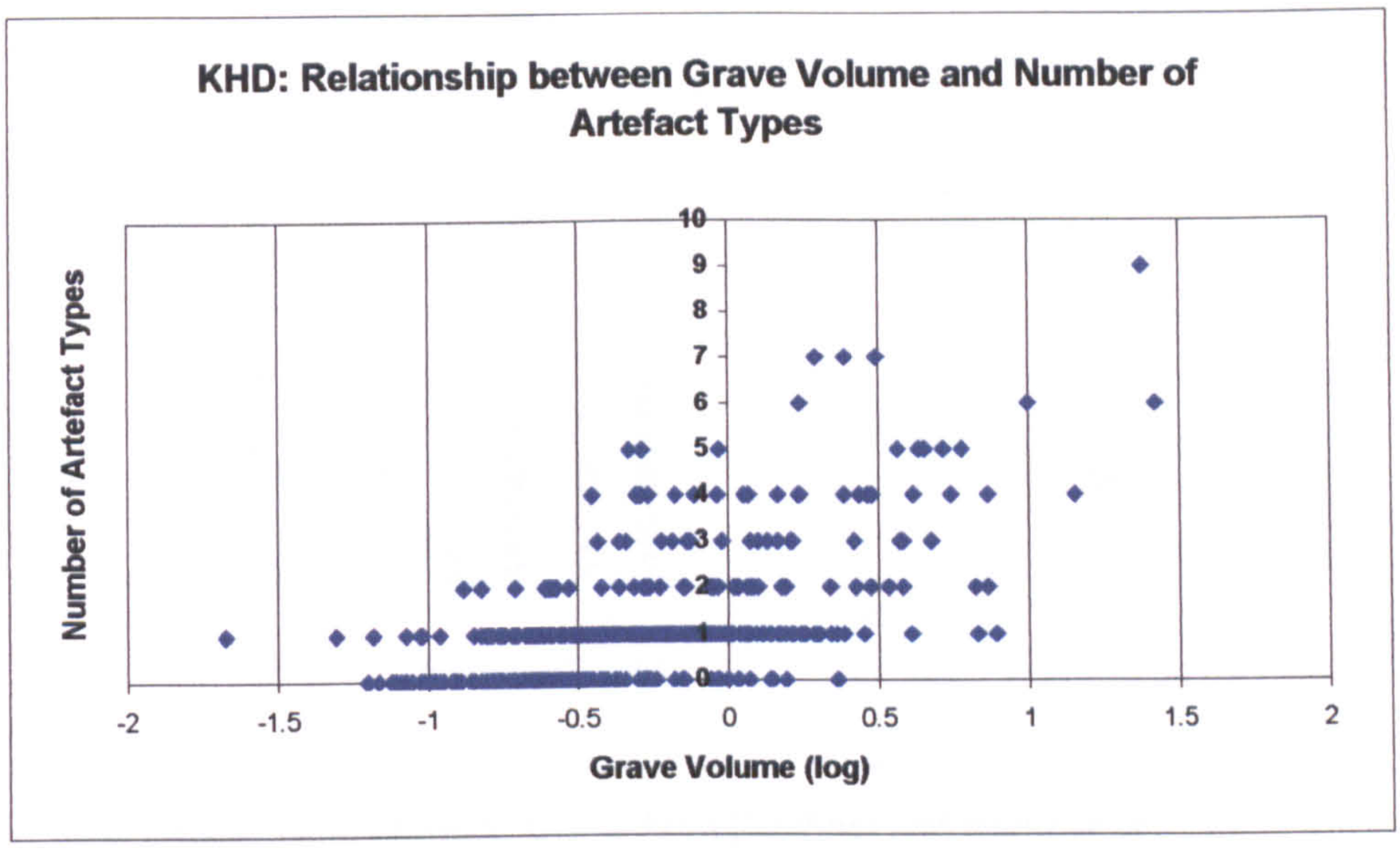
This clearly says much both for utilising as much information as possible within the analysis, and for observing changes on an intra- and inter-site scale. This has helped in strengthening the evidence for differential female and male treatment within this period, which informs regarding their potential positions within society. It may also help to clarify how the death of children and young adults affected the community, and how this might differ depending on the type of social organisation in place.





1 = up to $0.5m^3$
2 = over $0.5m^3$ to $1m^3$
3 = over $1m^3$ to $2m^3$
4 = over $2m^3$ to $3m^3$
5 = over $3m^3$ to $4m^3$
6 = over $4m^3$ to $8m^3$
7 = over $8m^3$ to $12m^3$
8 = over $12m^3$ to $16m^3$
9 = over $16m^3$

Figure 6.54i: KHD Relationship between Number of Types and Total Goods, and Grave Size



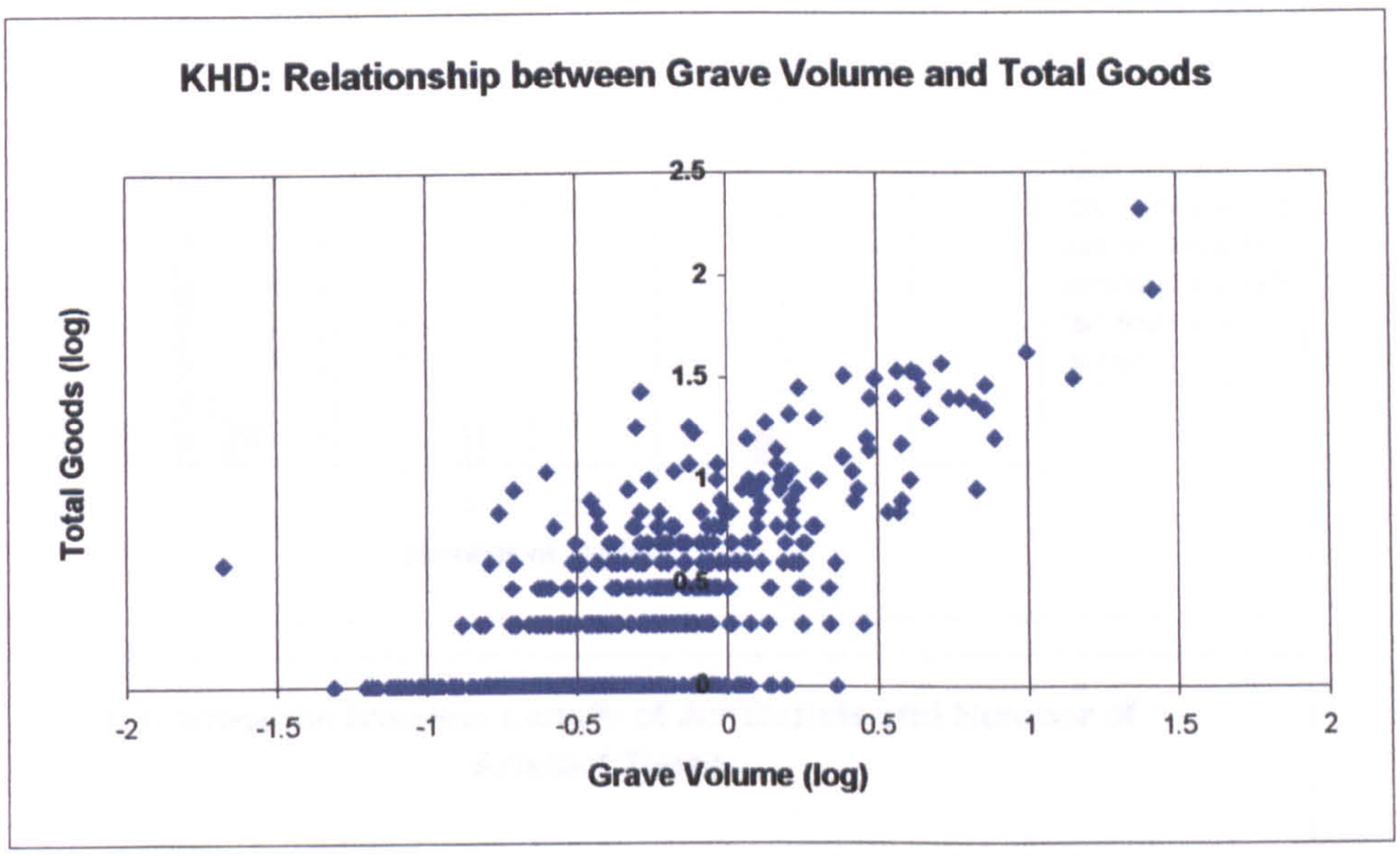
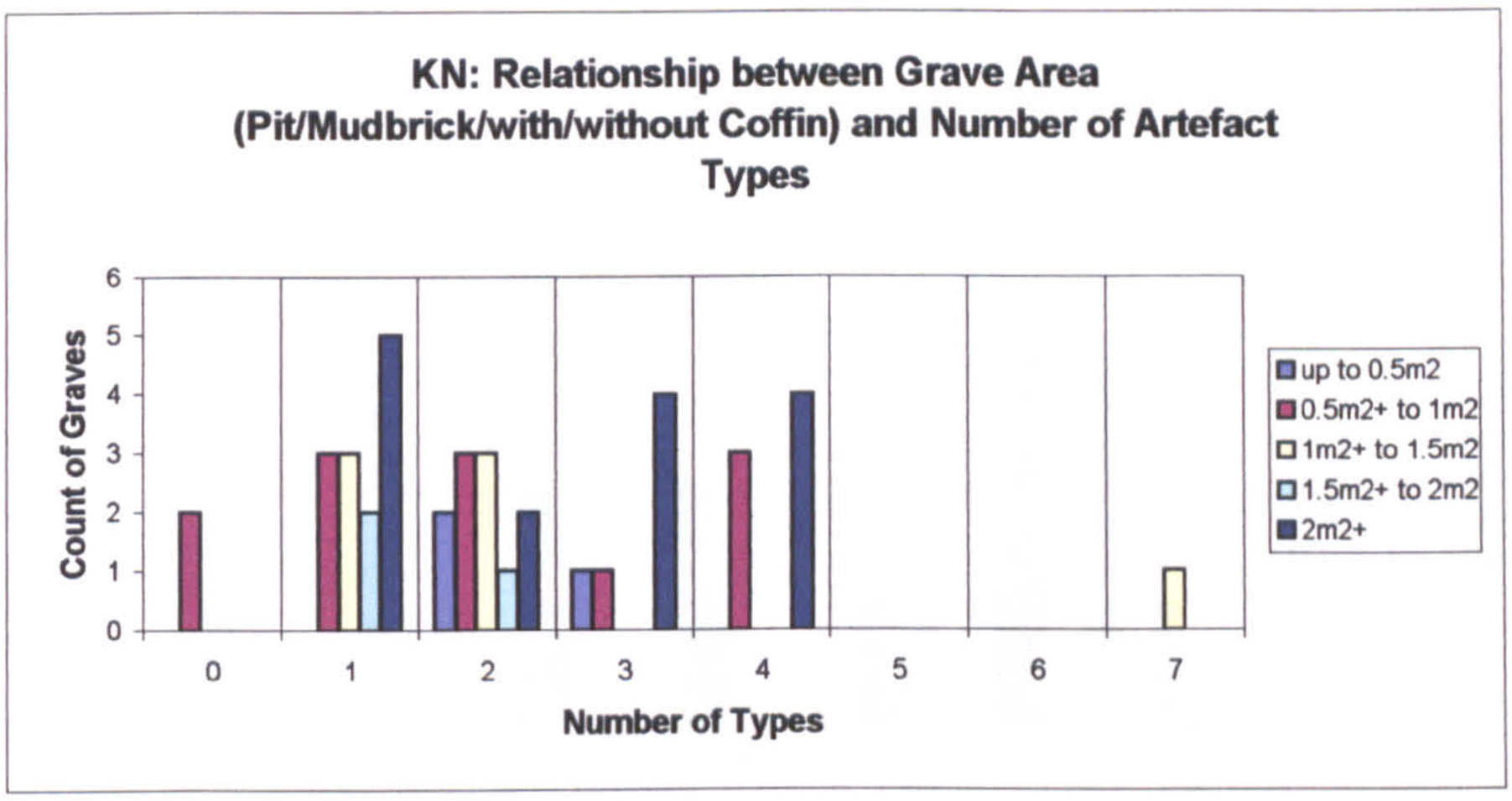
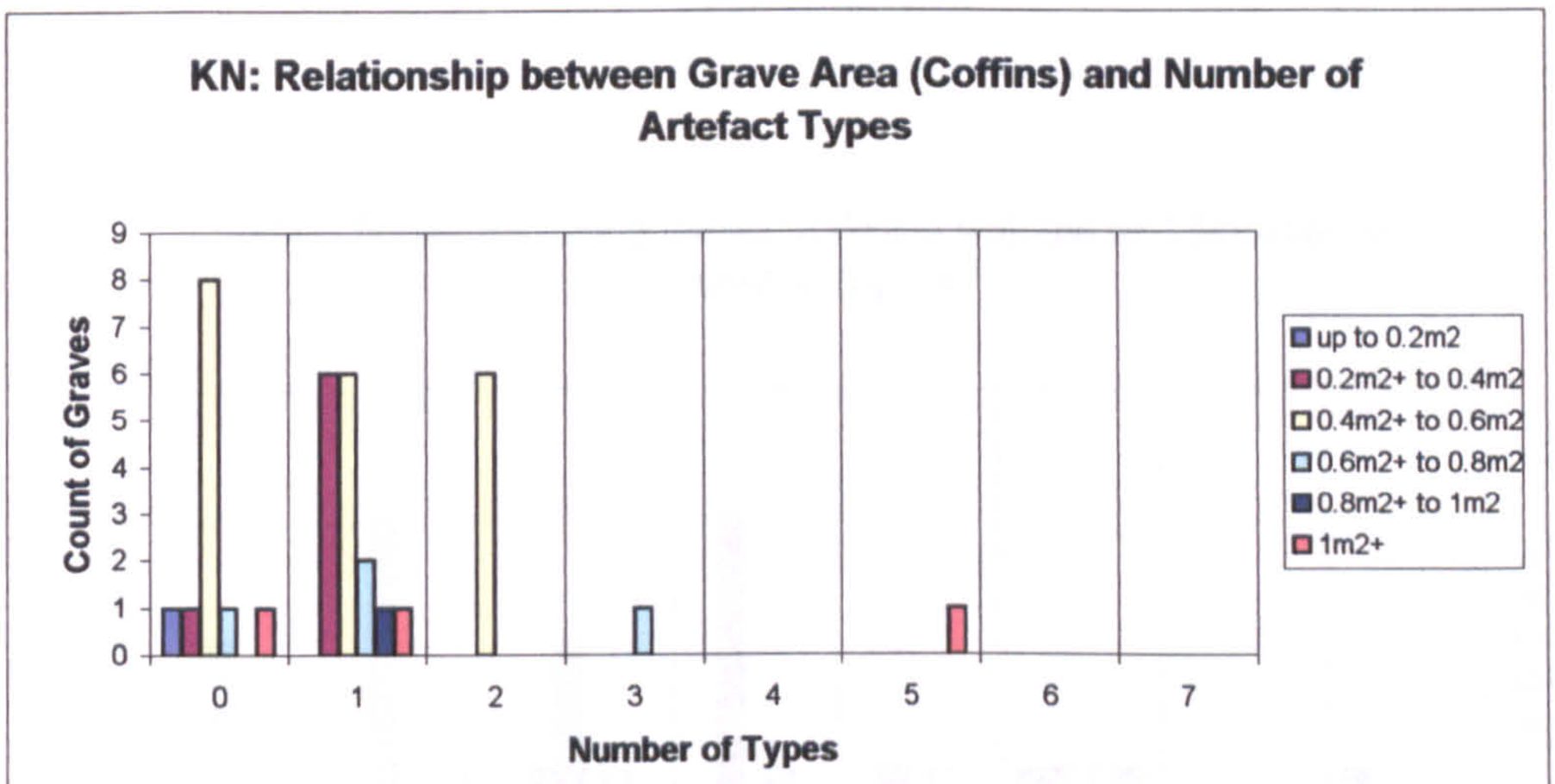


Figure 6.54ii: KHD Relationship between Number of Types and Total Goods, and Grave Size





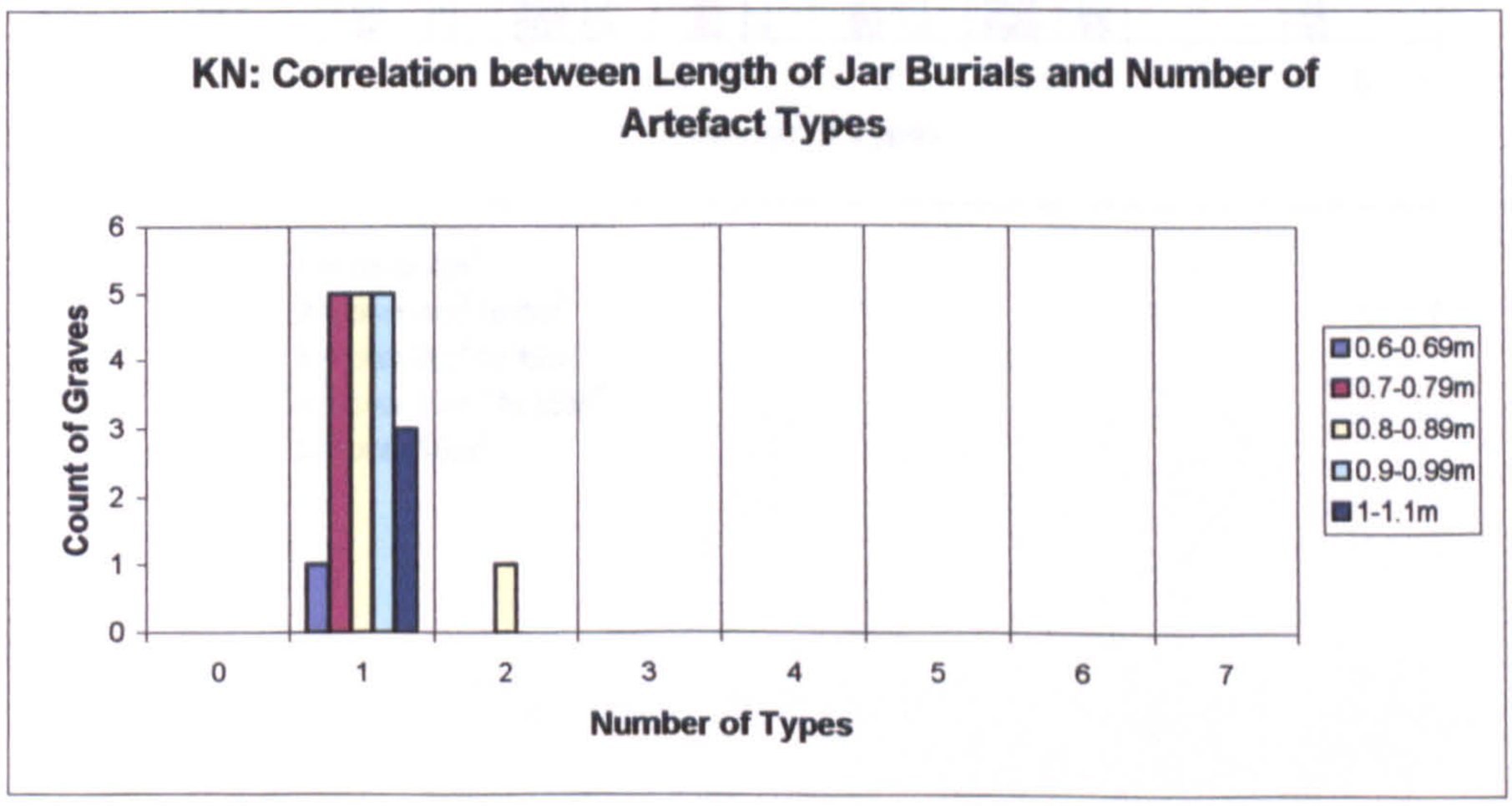
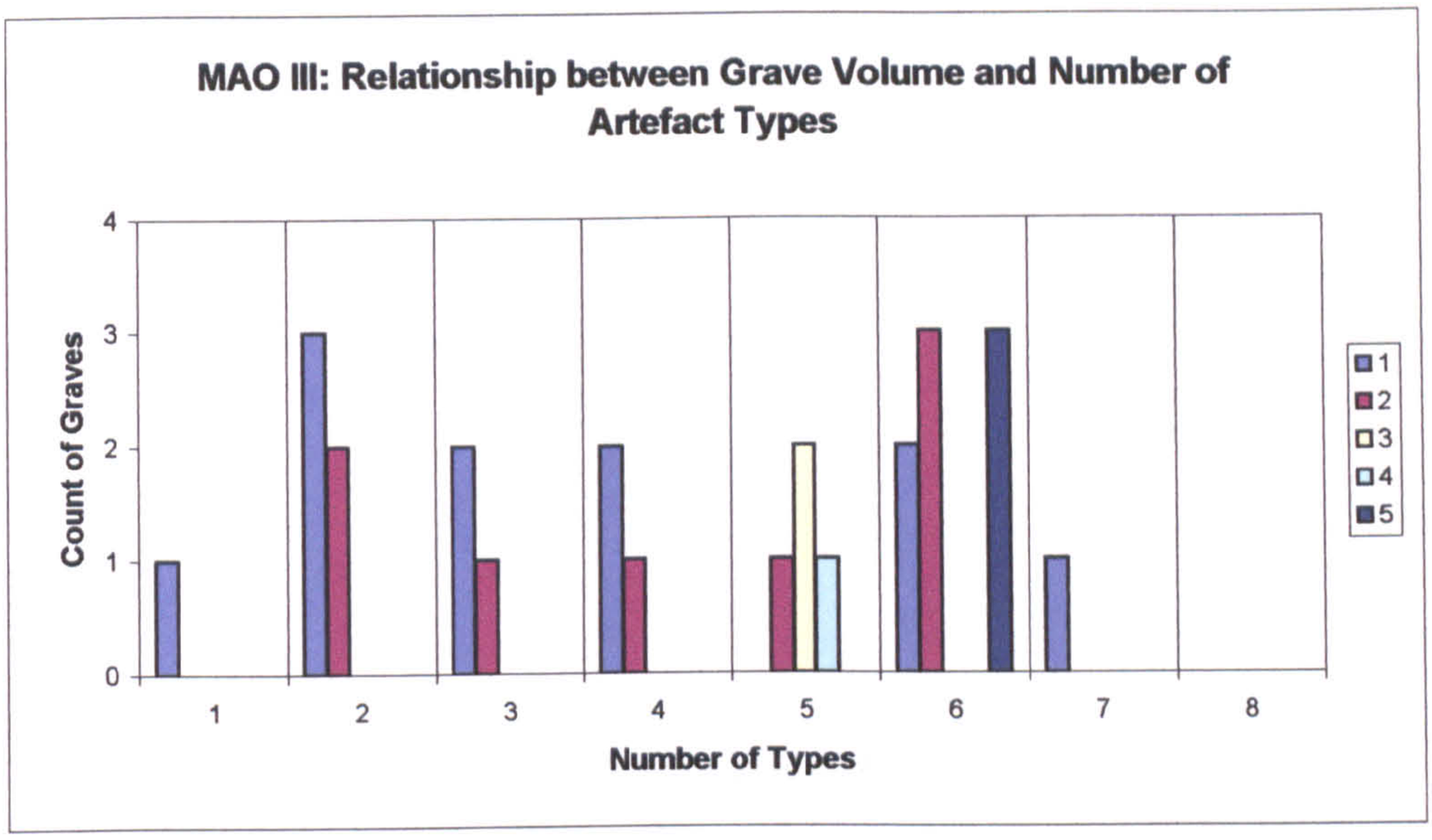
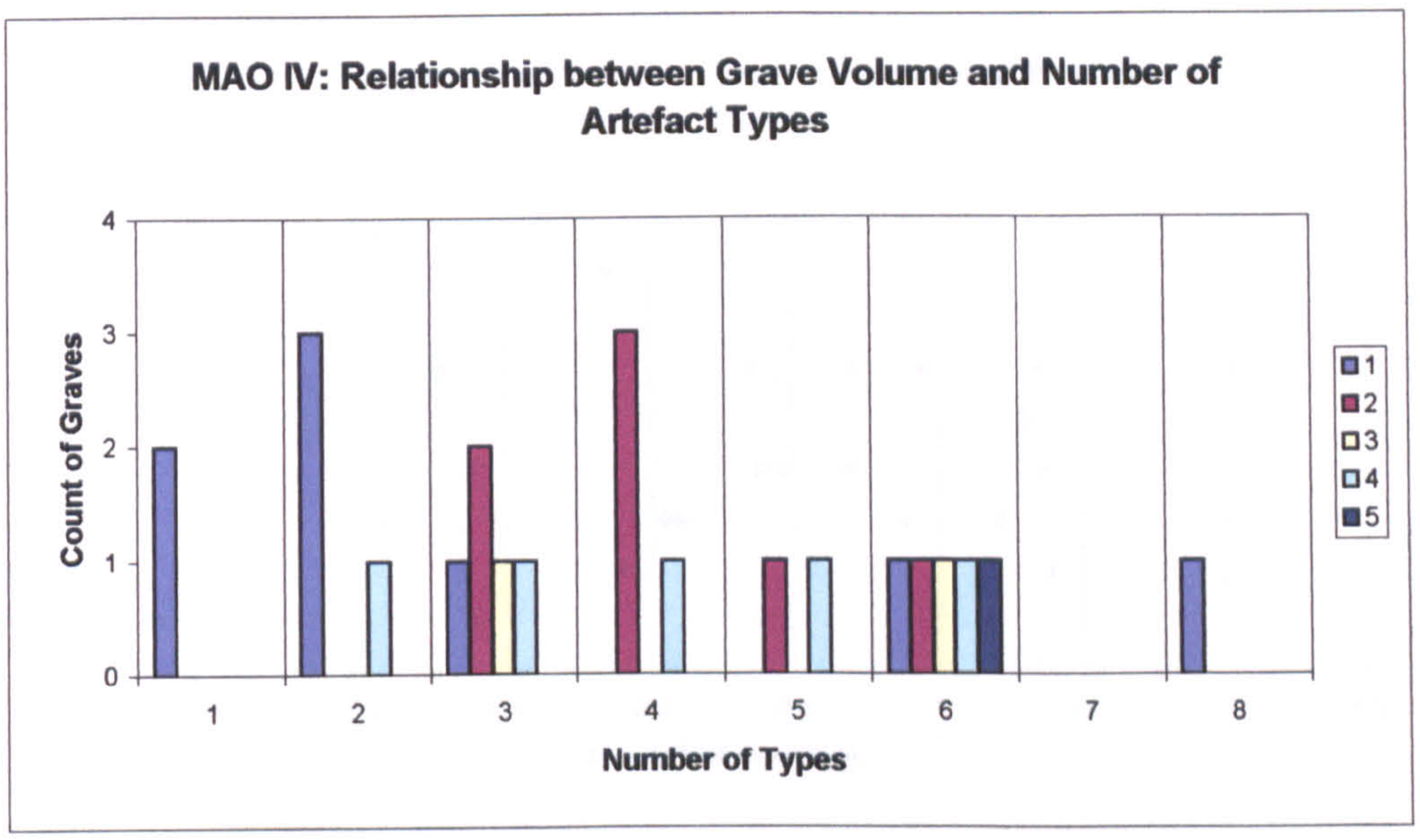


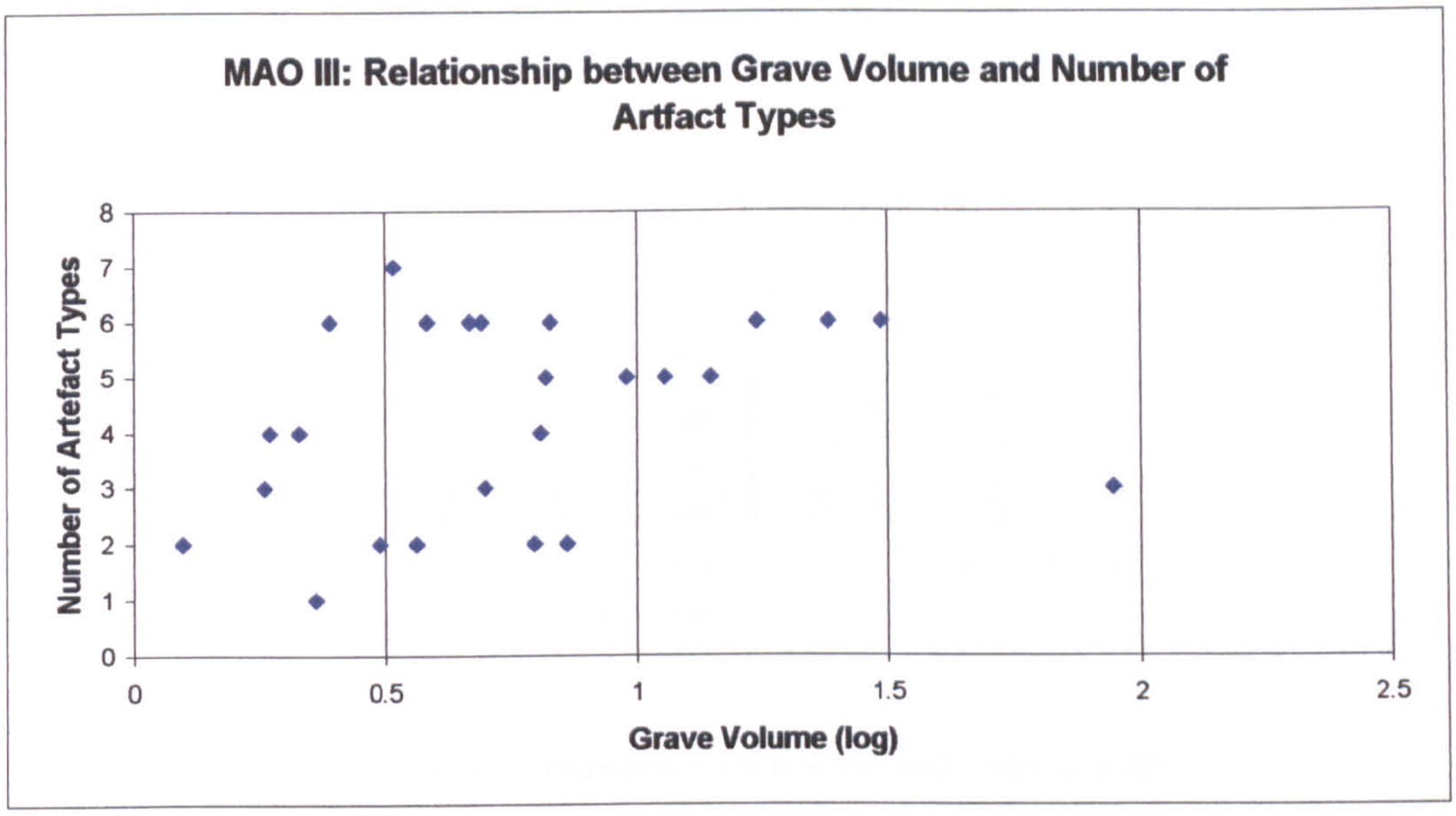
Figure 6.55: KN Relationship between Number of Types and Grave Size





1 = up to $4m^3$
2 = over $4m^3$ to $8m^3$
3 = over $8m^3$ to $12m^3$
4 = over $12m^3$ to $16m^3$
5 = over $16m^3$

Figure 6.56i: MAO Relationship between Number of Types and Grave Size



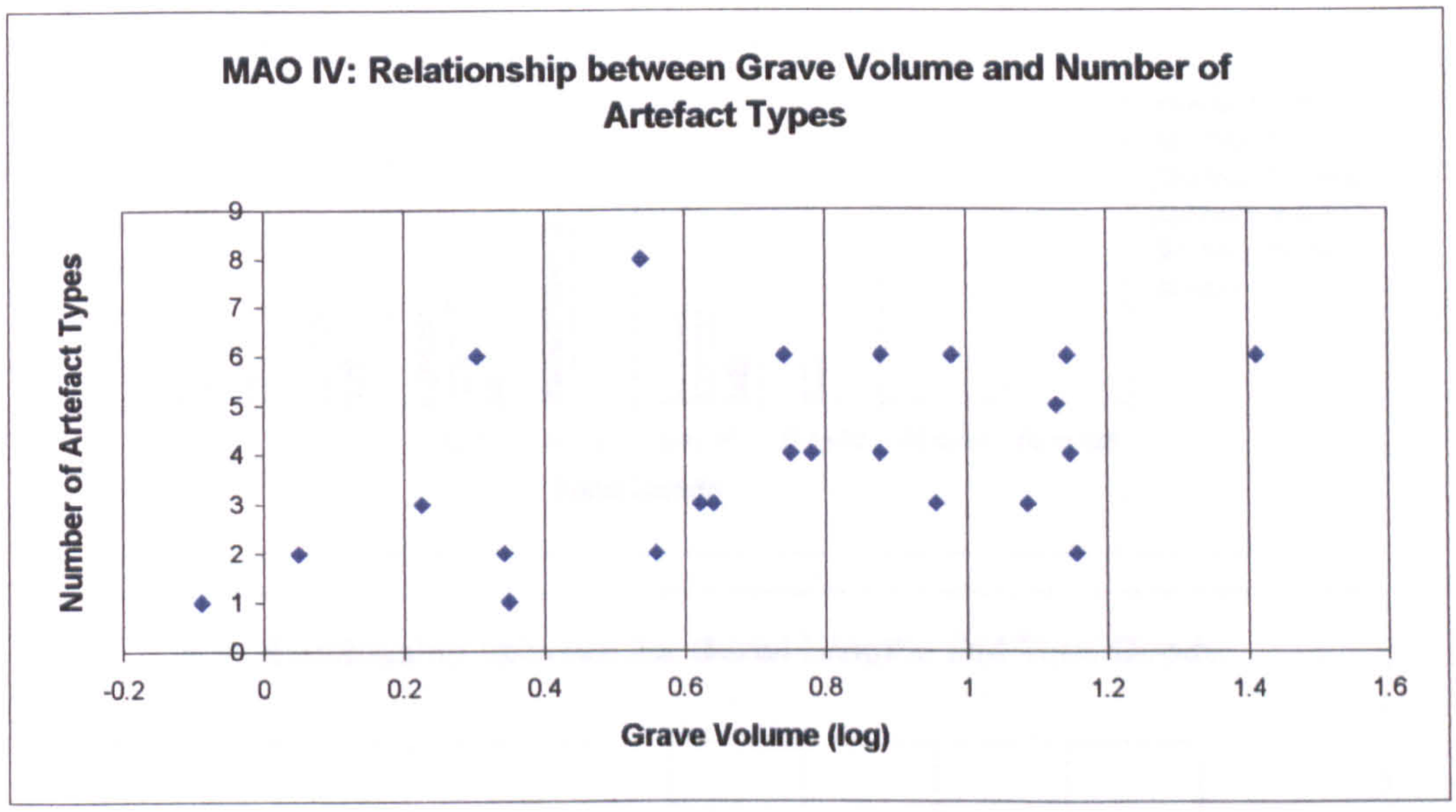
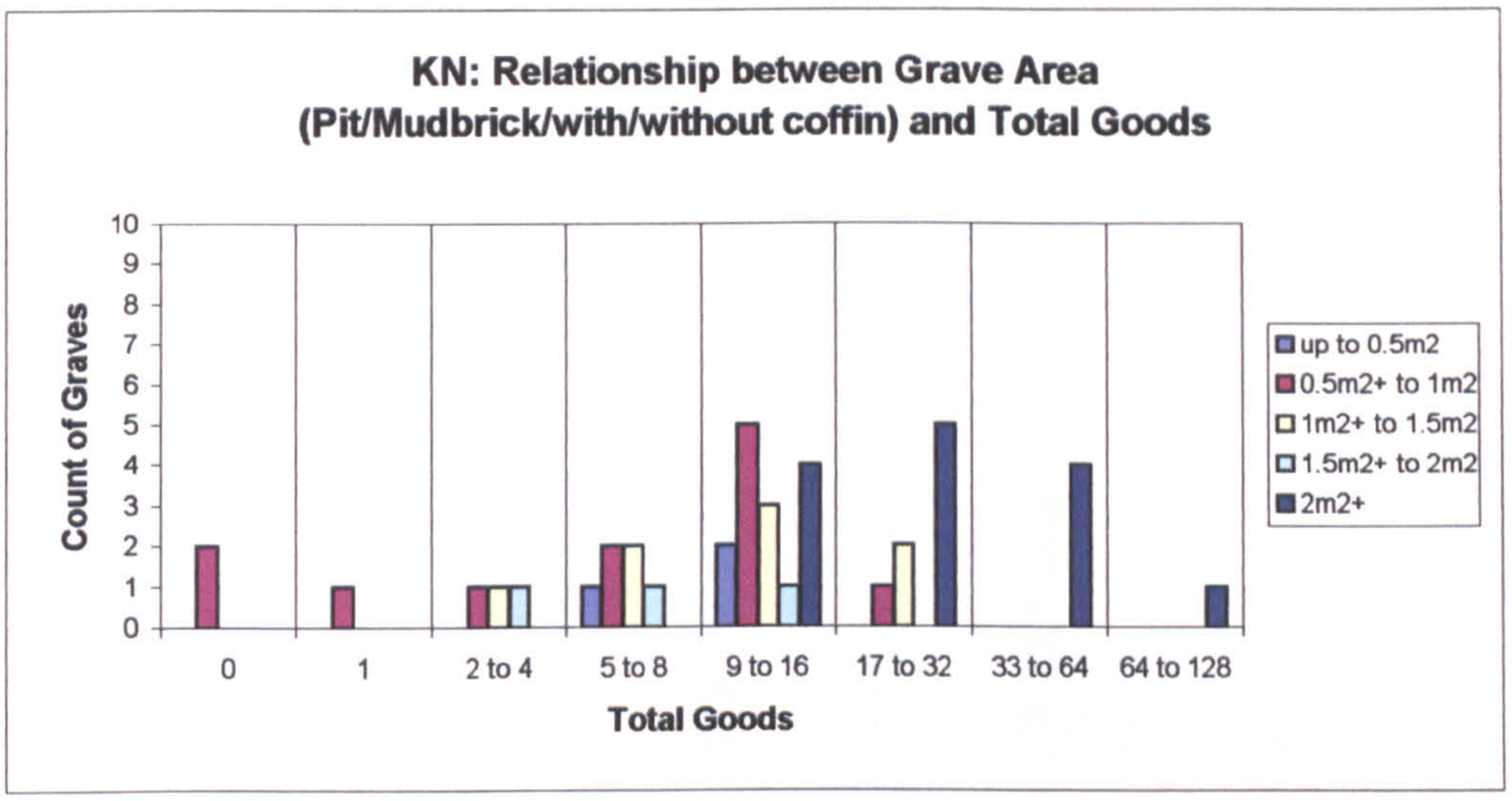
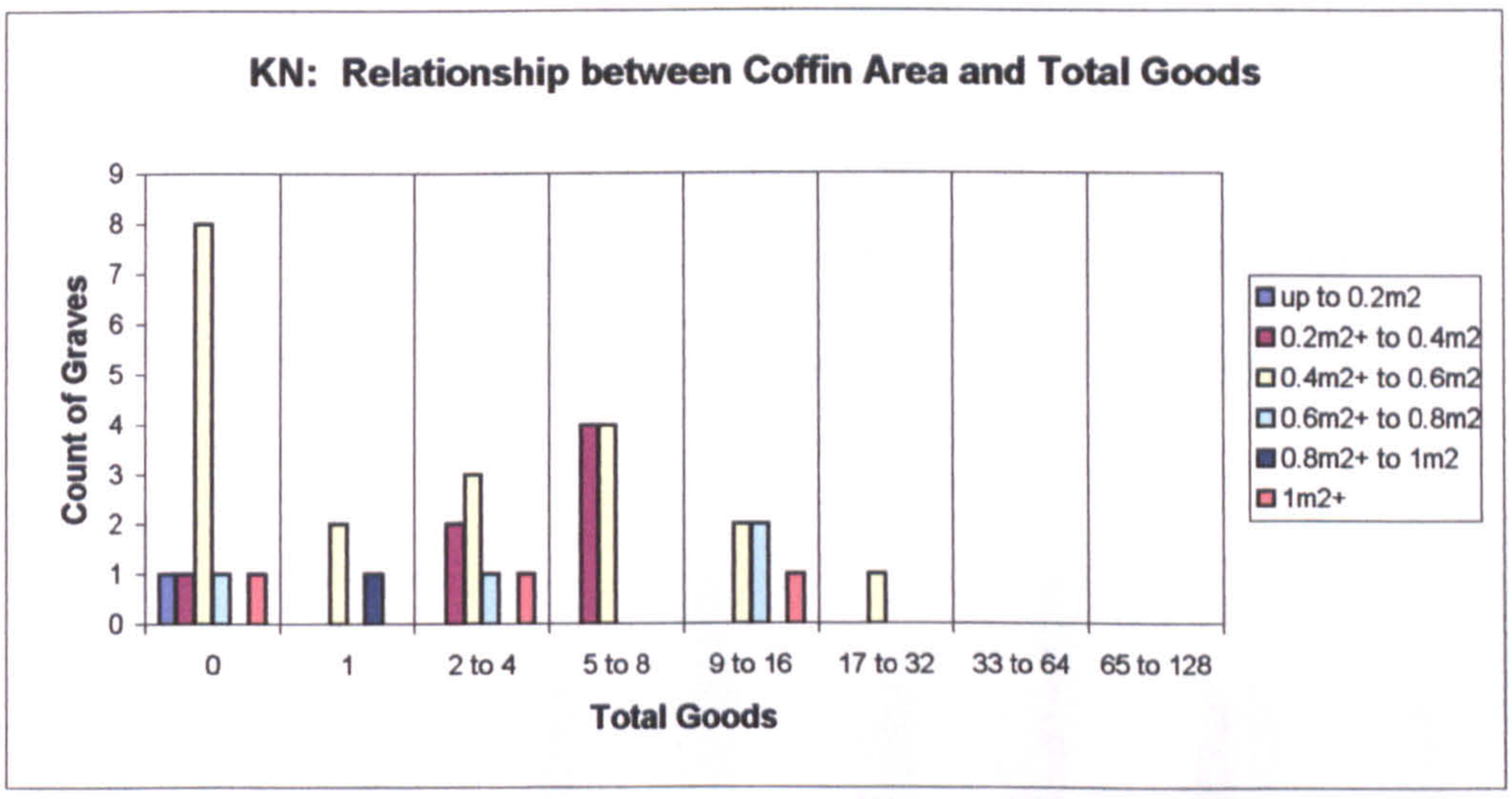


Figure 6.56ii: MAO Relationship between Number of Types and Grave Size





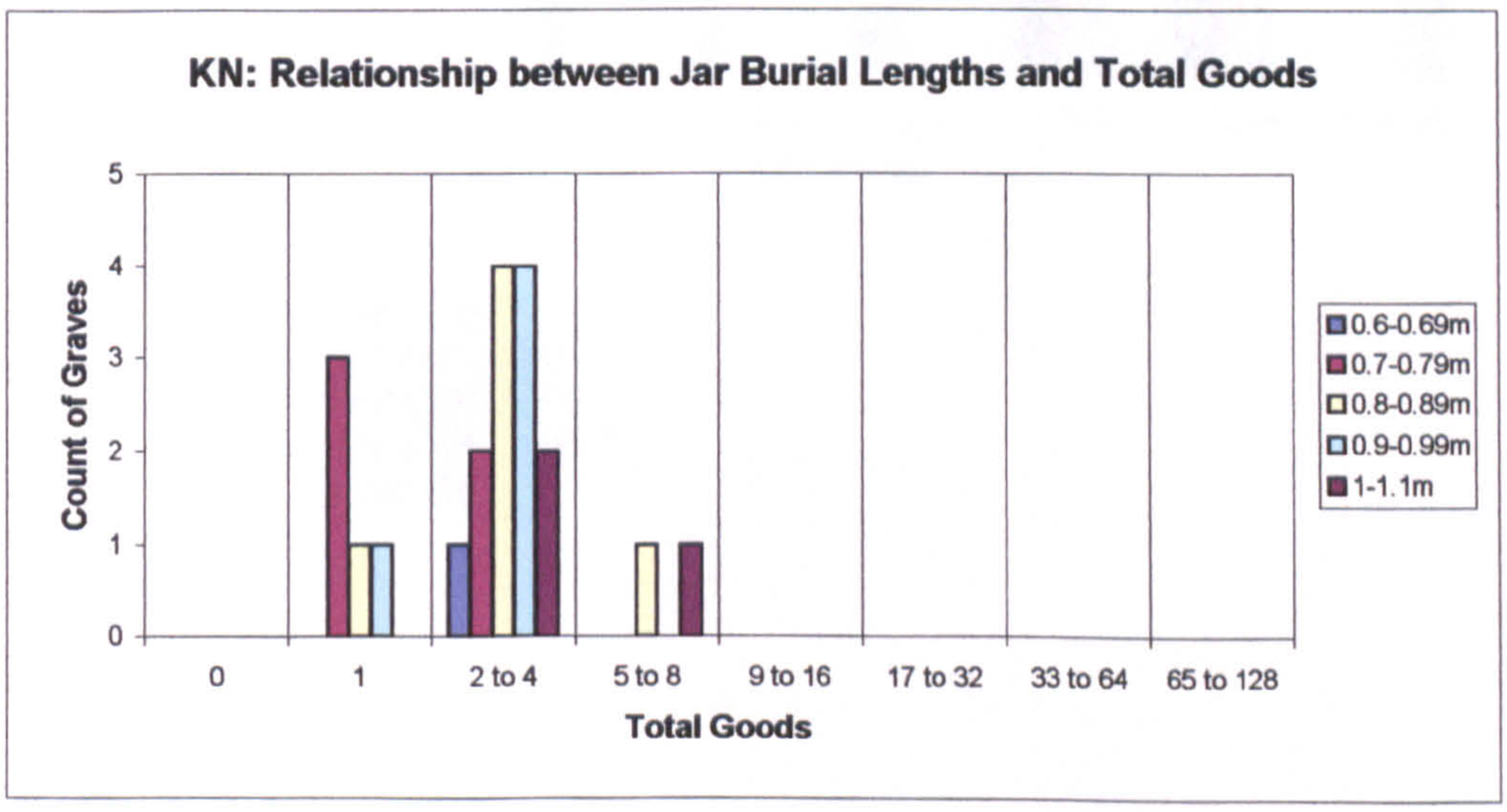
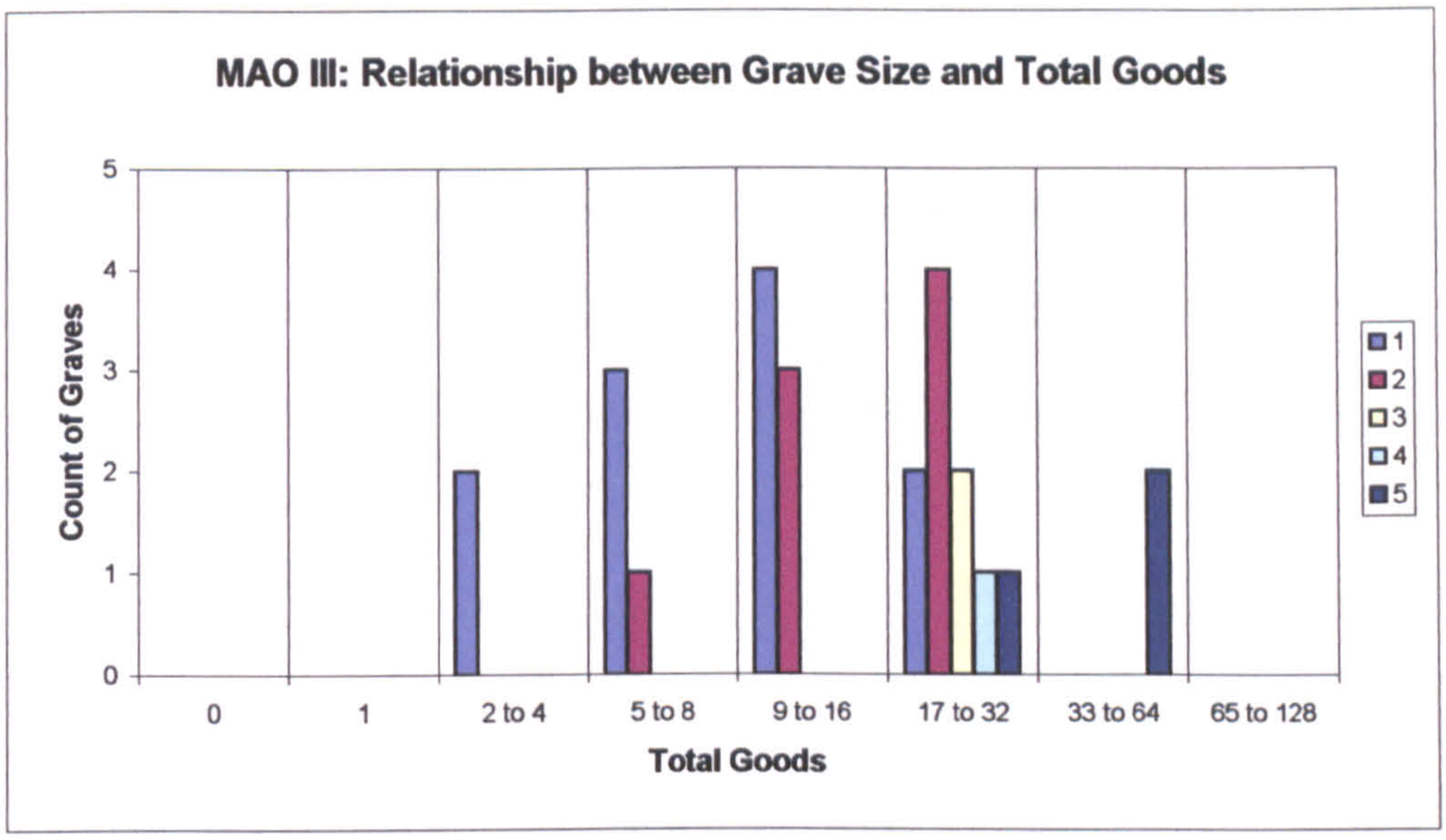
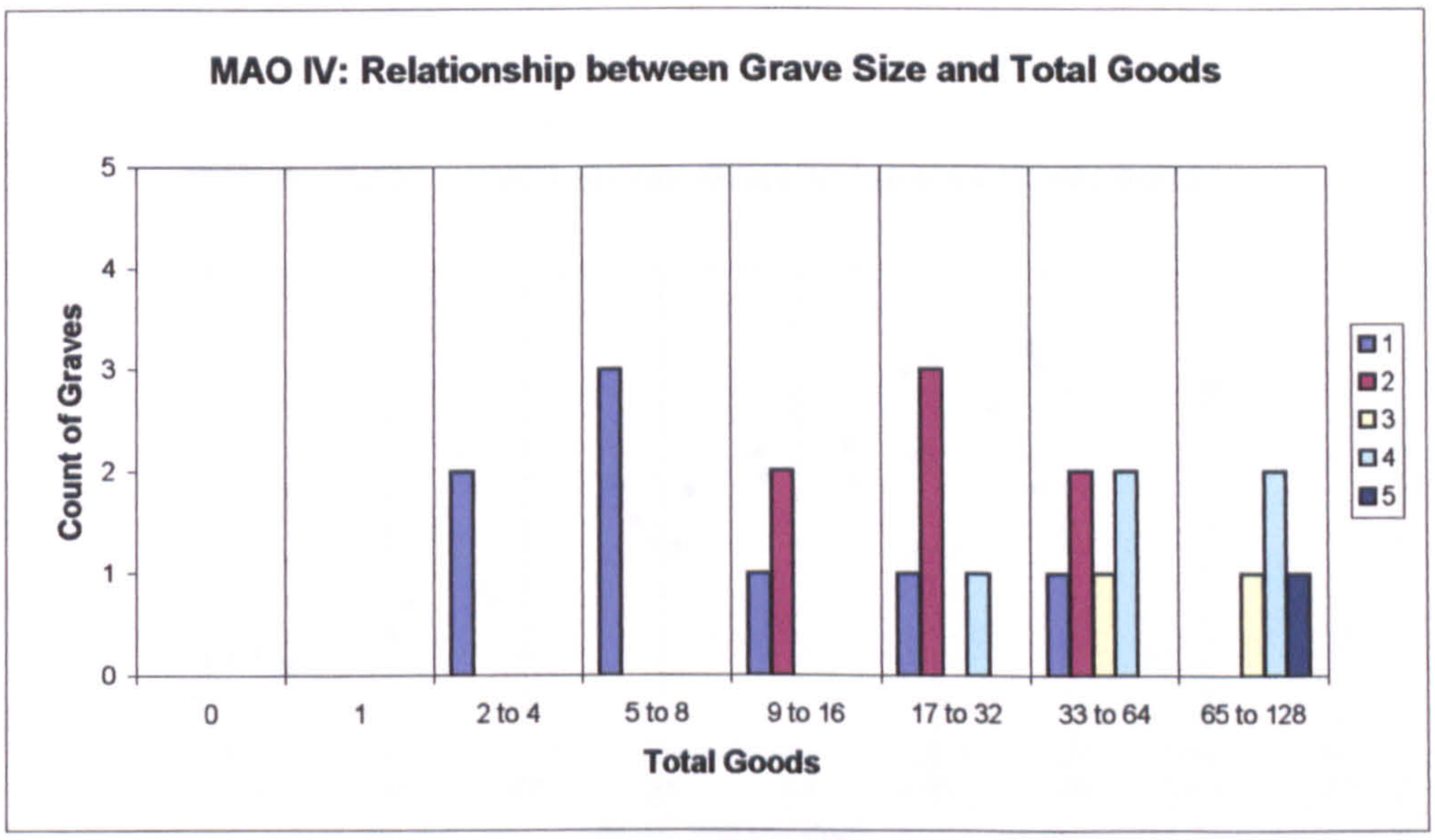


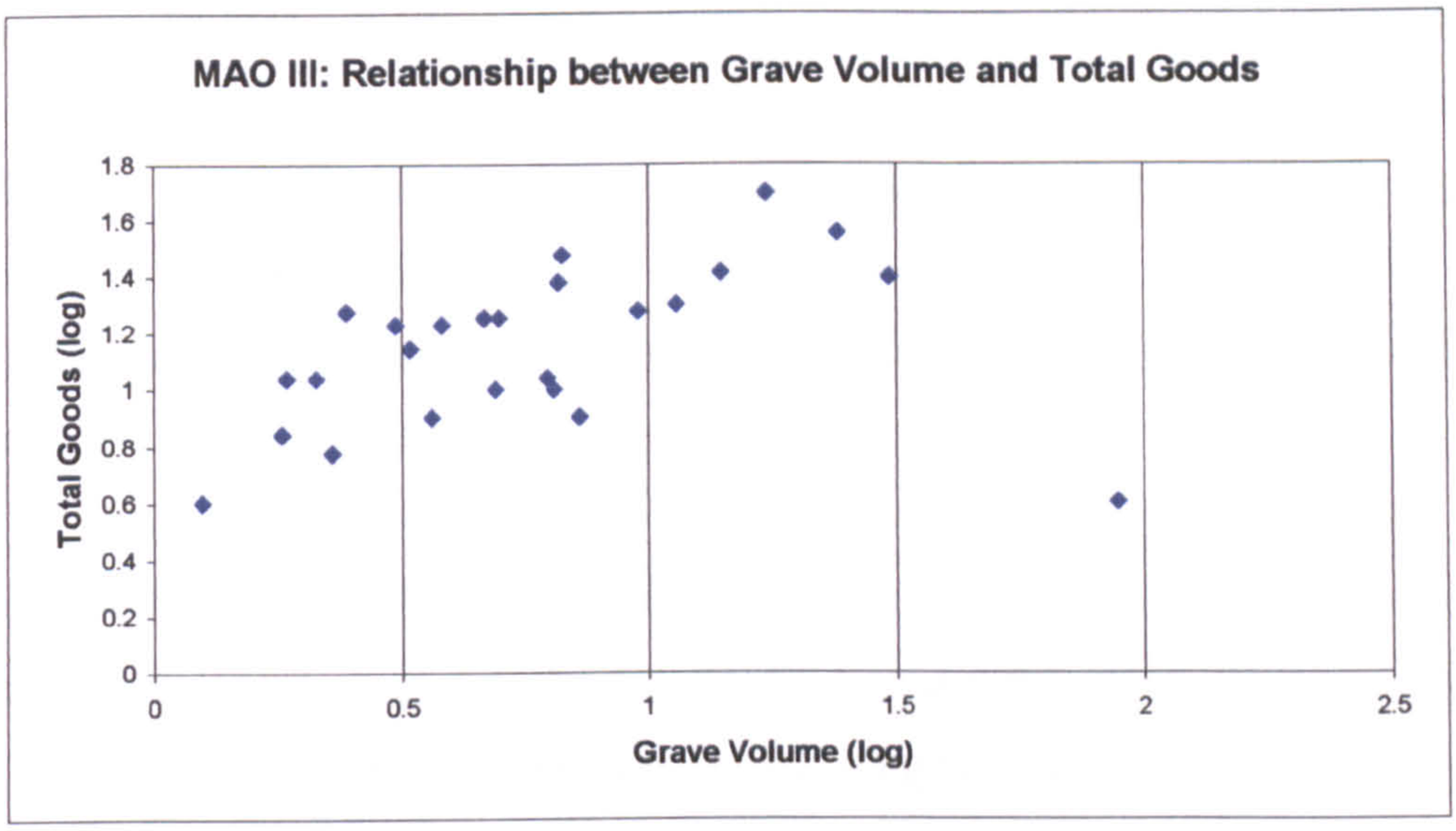
Figure 6.57: KN Relationship between Grave Size and Total Goods





1 = up to $4m^3$
2 = over $4m^3$ to 8m3
3 = over $8m^3$ to $12m^3$
4 = over $12m^3$ to $16m^3$
5 = over $16m^3$

Figure 6.58i: MAO Relationship between Grave Size and Total Goods



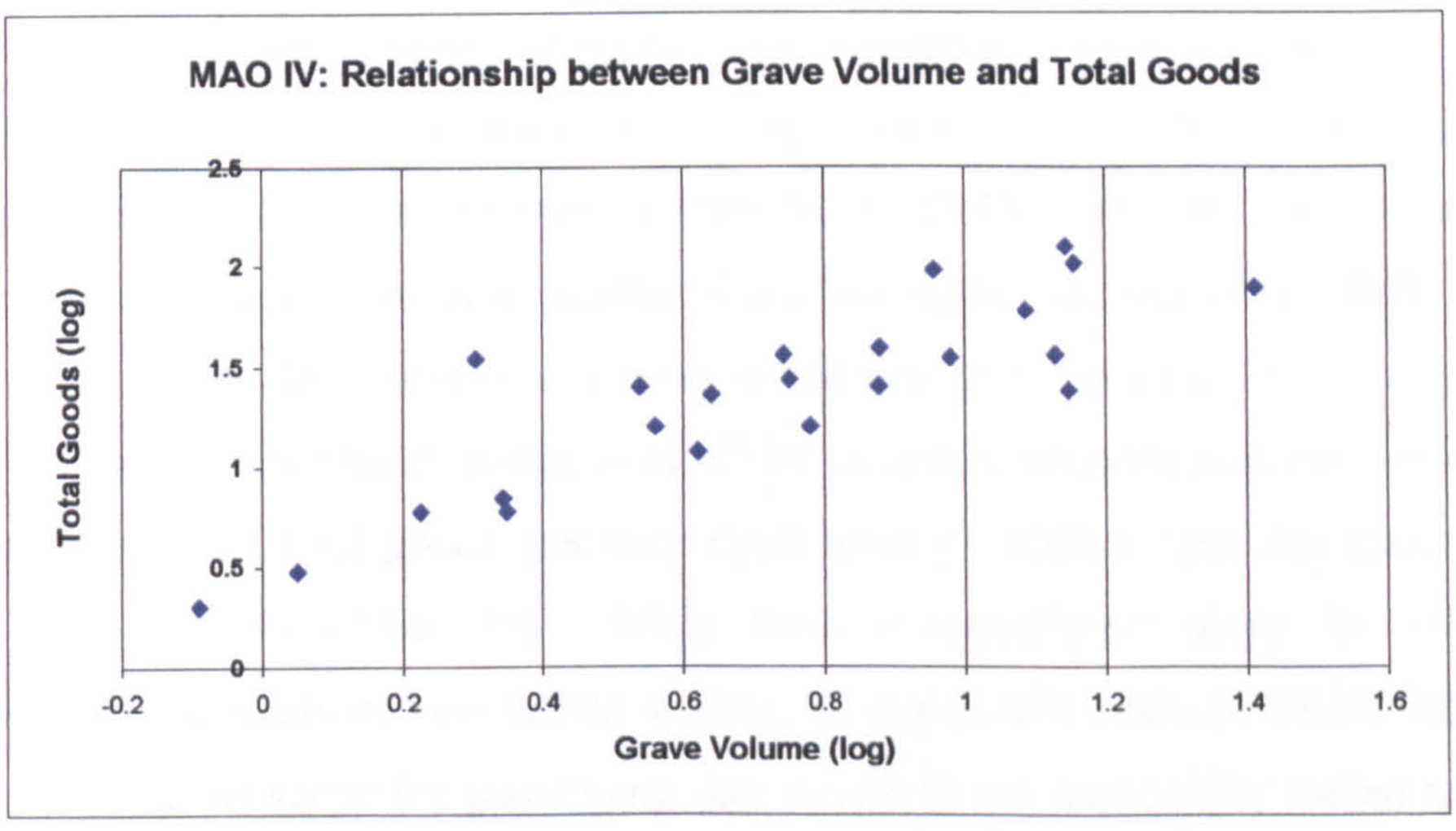


Figure 6.58ii: MAO Relationship between Grave Size and Total Goods

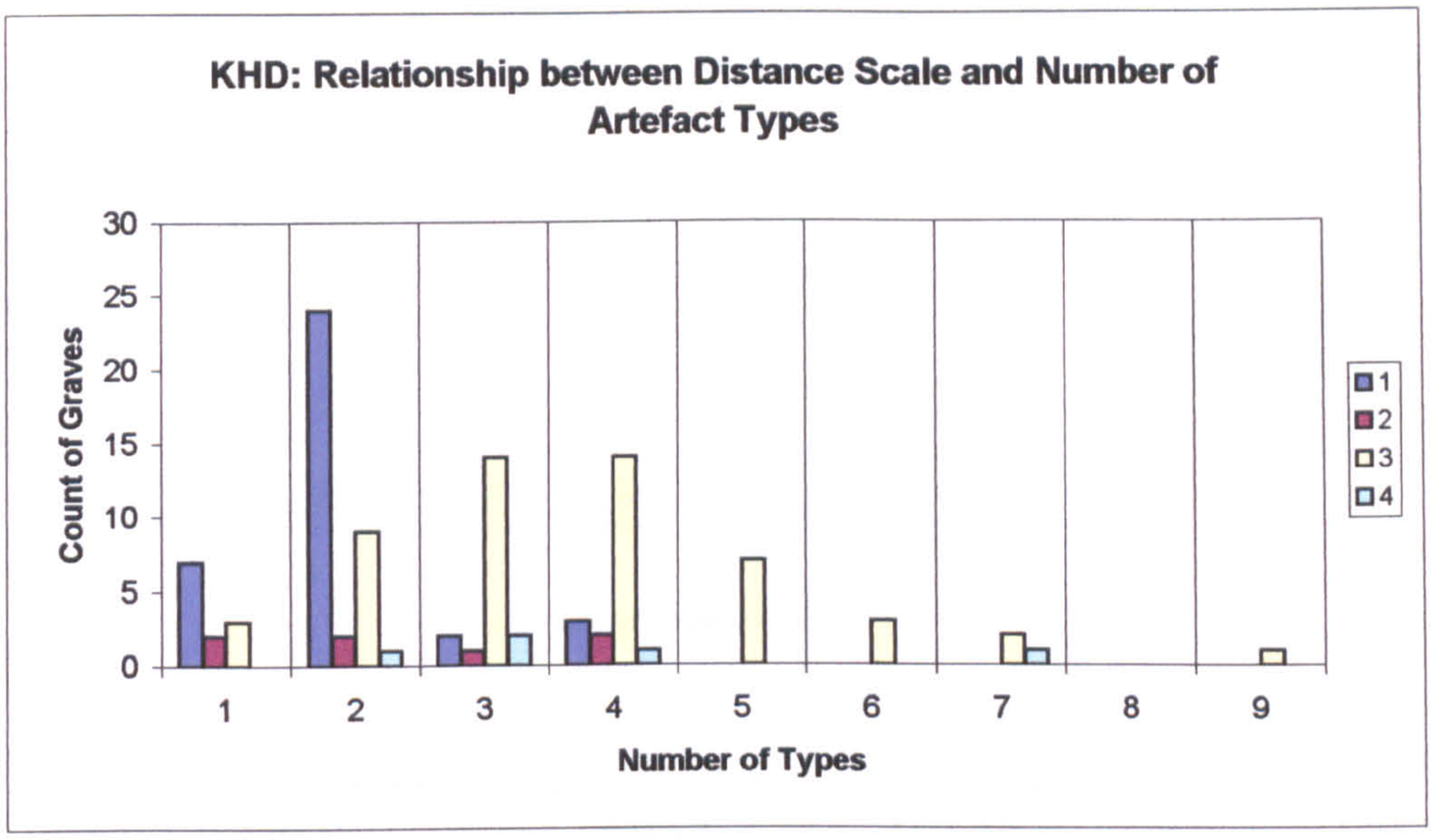
6.2.4.3 Wealth: effort

Artefact Type and Total Goods: Grave Size

In general it does appear that at the lower end of the wealth scale we find the smallest graves, and at the higher the largest, but there is a good deal of mixture between the two. It is also clear that we generally find the highest number of types in the largest graves. At KHD (Figures 6.54i-ii), however, we see that large graves do not automatically equate to a high number and variety of grave goods, since some large graves have only a few items, although the largest grave sizes always contain in excess of six types. This is similarly the case at KN (Figure 6.55).

The evidence from MAO (Figure 6.56i-ii) is revealing since during MAO III a grave of the smallest size category (a female) is actually associated with the highest number of types. Rather than large graves containing a wide range of types, as at KHD and KN, the evidence from MAO III shows that smaller graves are present across the board, with large graves restricted to high numbers of types. This persists into MAO IV, but with greater variation in the range of types present in the larger graves. The picture is similar at TIA, since grave B200/160 1 (contemporary with MAO III/IV) contains the highest total number of goods, and the highest number of artefact types (van den Brink 1988; 1992a; van Haarlem 1998a, 18). However it is not the largest grave to have been found; grave B200/170 1 on the other hand (dating to MAO IV) is nearly twice the volume, with nearly the same number of total goods, yet only three types of artefact (van den Brink 1988; 1992a; van Haarlem 1998a, 18). While there is insufficient scope for inference concerning the amounts of tiers within society, as is possible from the MAO evidence, there is nonetheless scope for postulating that wealth is not exclusively linked to grave size or number of types.

It is possible that size, as a sole variable, could be an expression of wealth, position and/or power. The closest relationships between grave size and wealth (both total goods and diversity of artefact types), however, seem most apparent in the very large graves; those graves which we might infer as having being constructed and furnished for community heads or kin group heads.



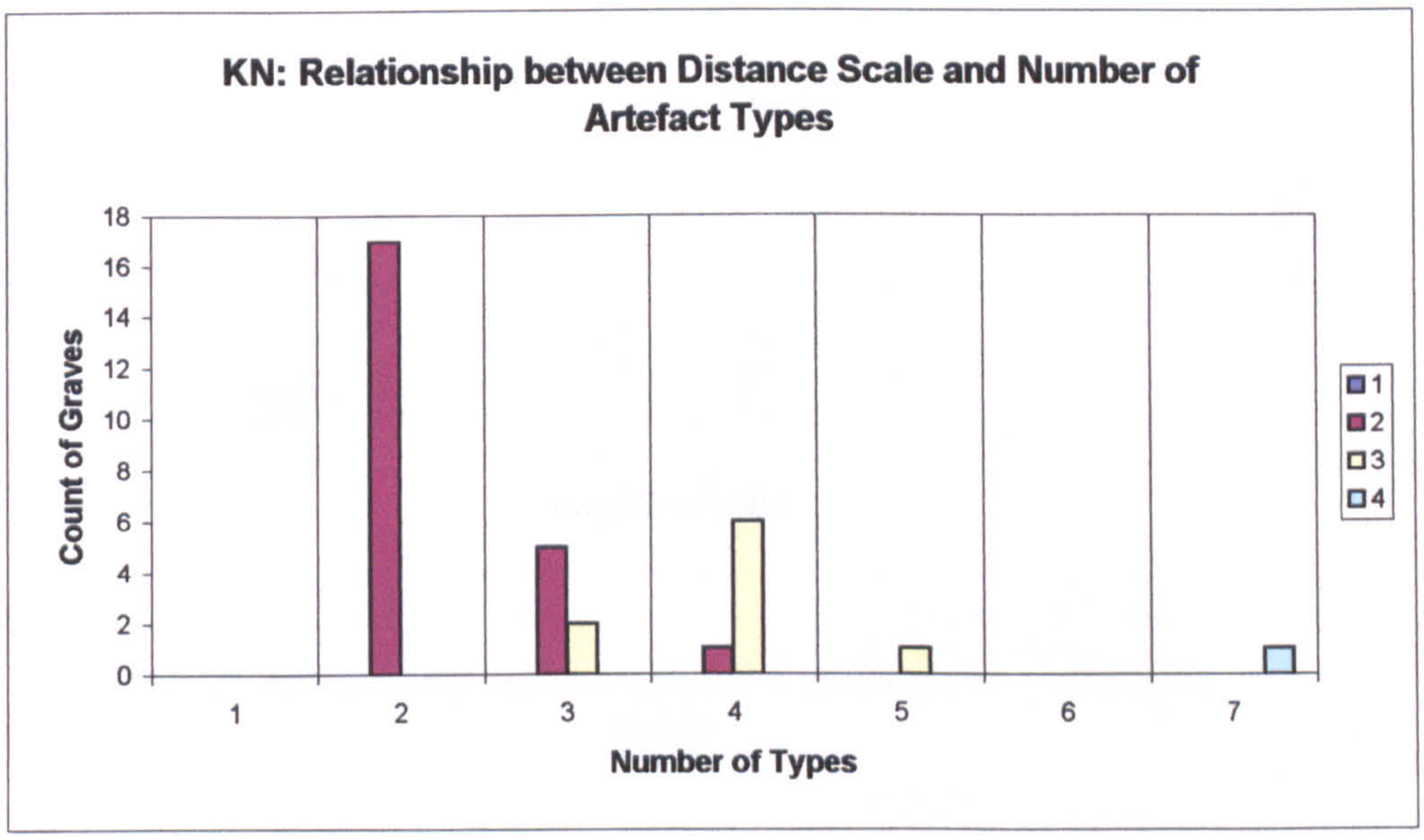
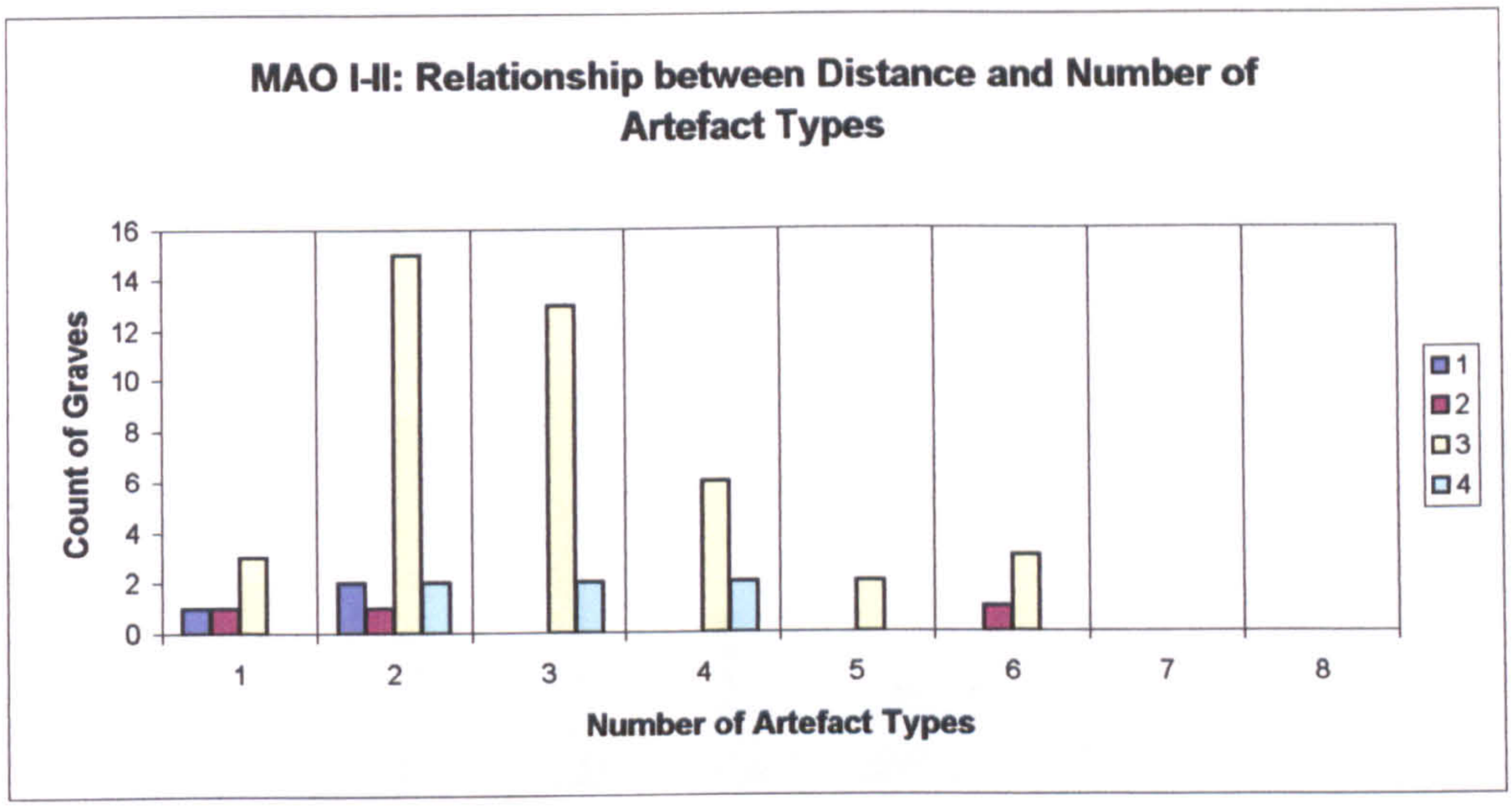
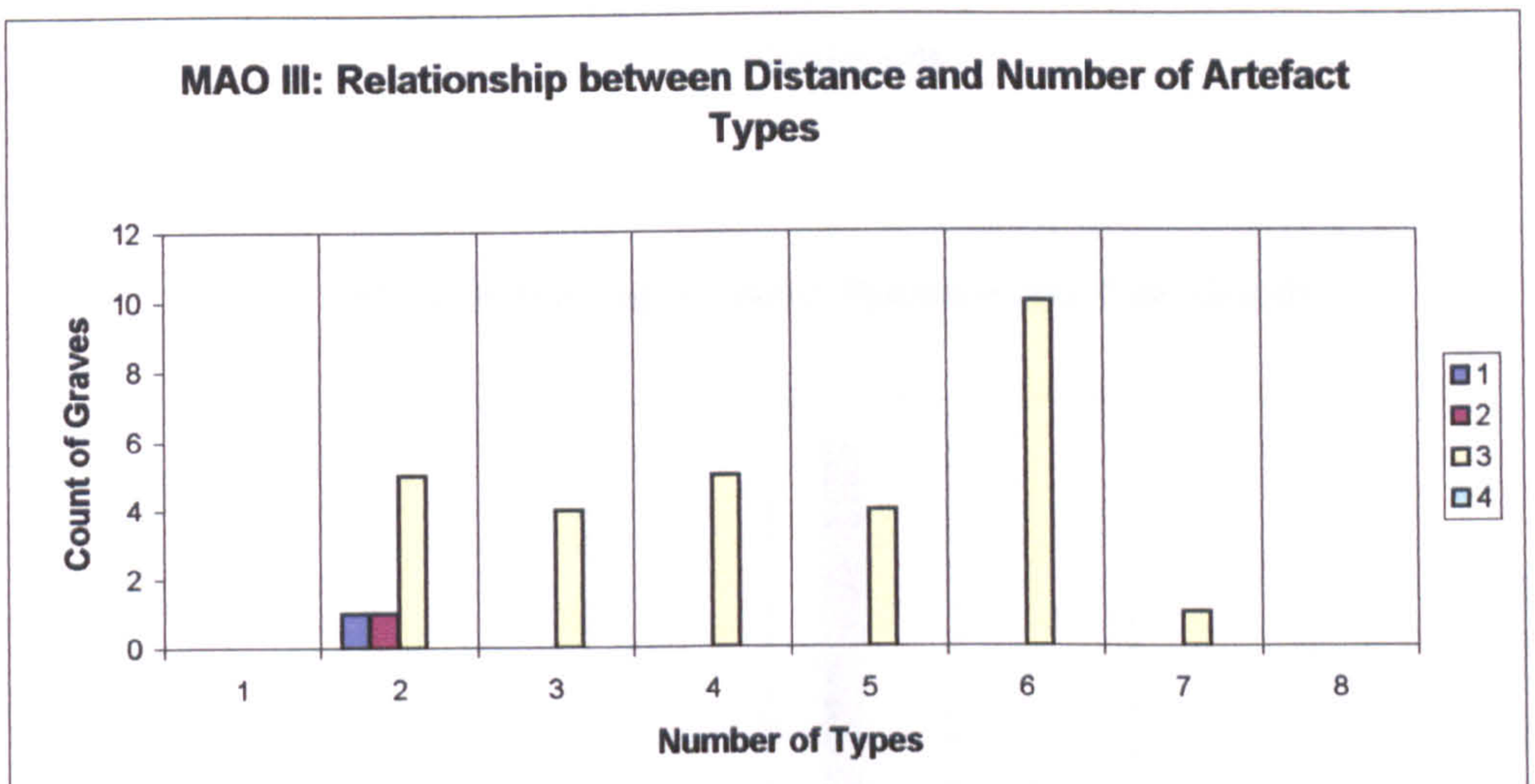


Figure 6.59: KHD and KN Relationship between Distance Scale and Number of Artefact Types





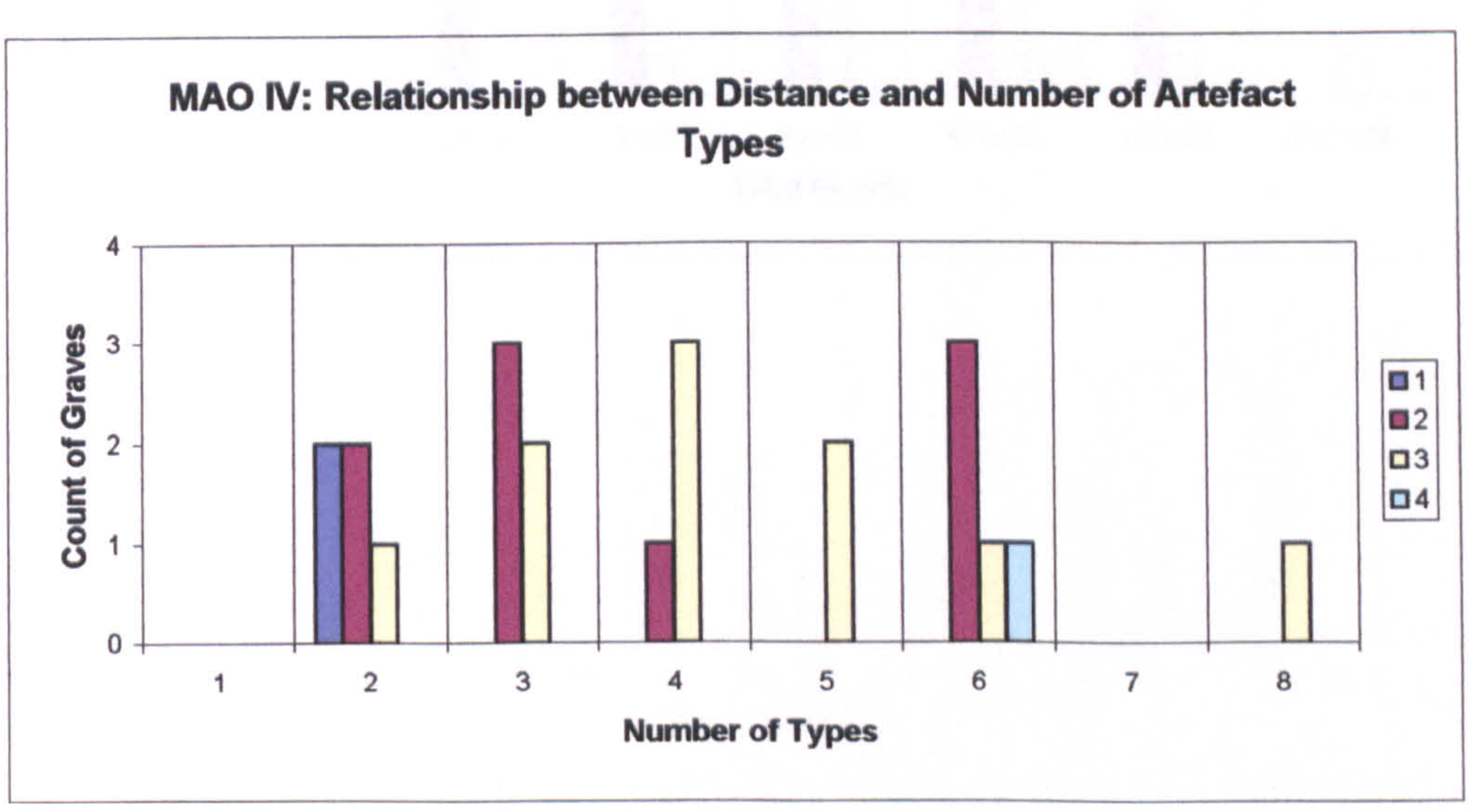
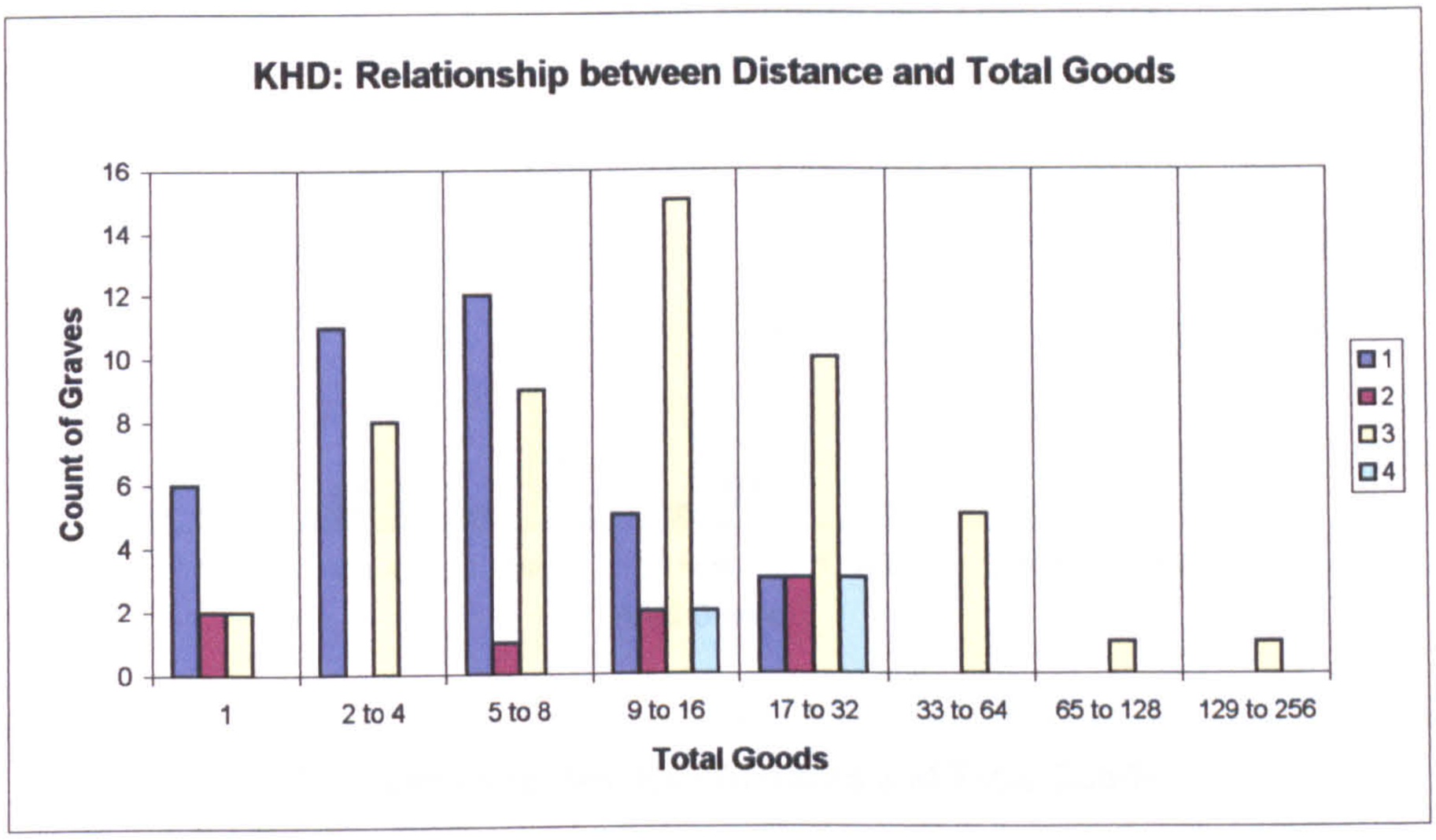


Figure 6.60: MAO Relationship between Distance Scale and Number of Artefact Types



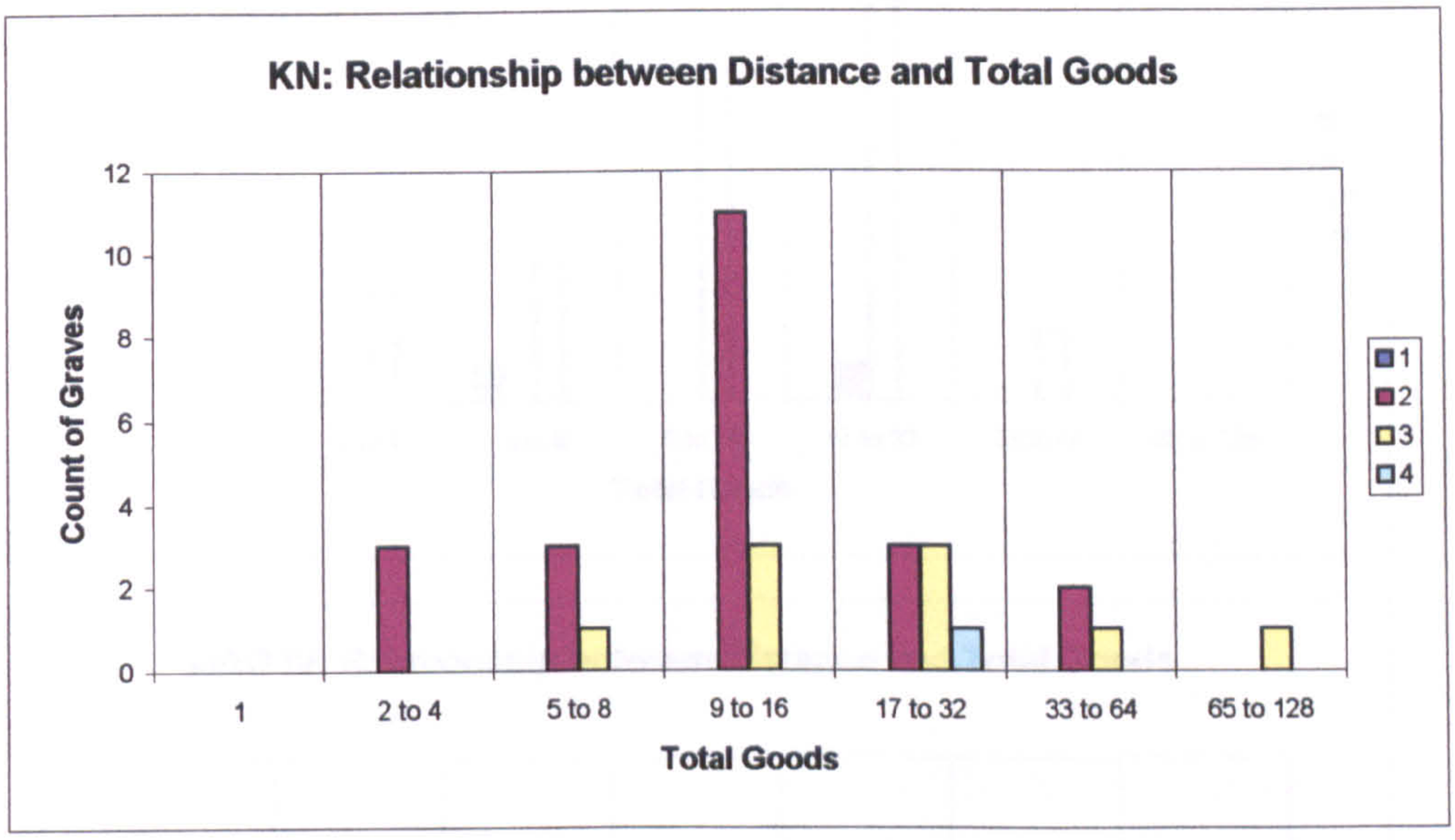
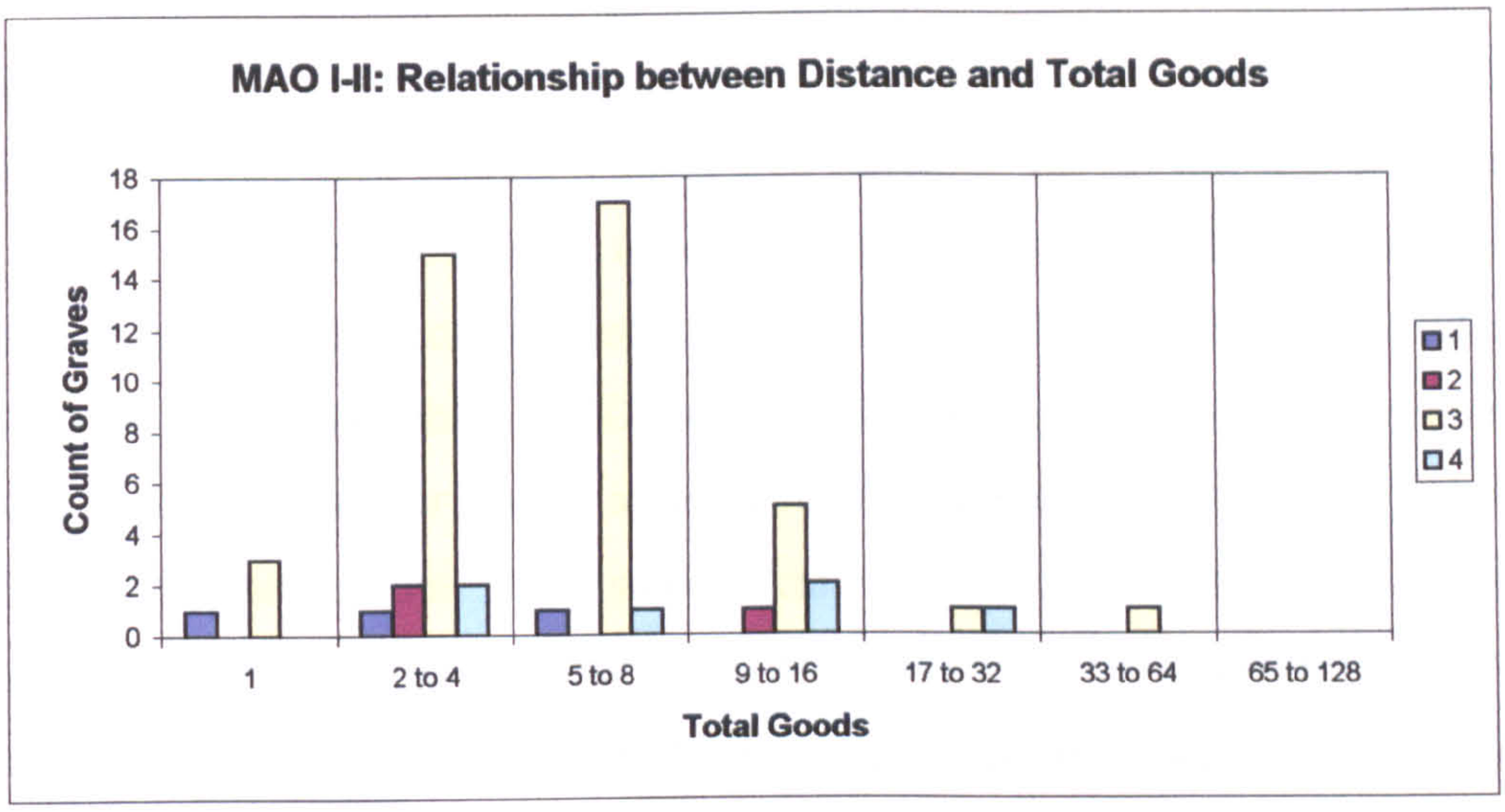
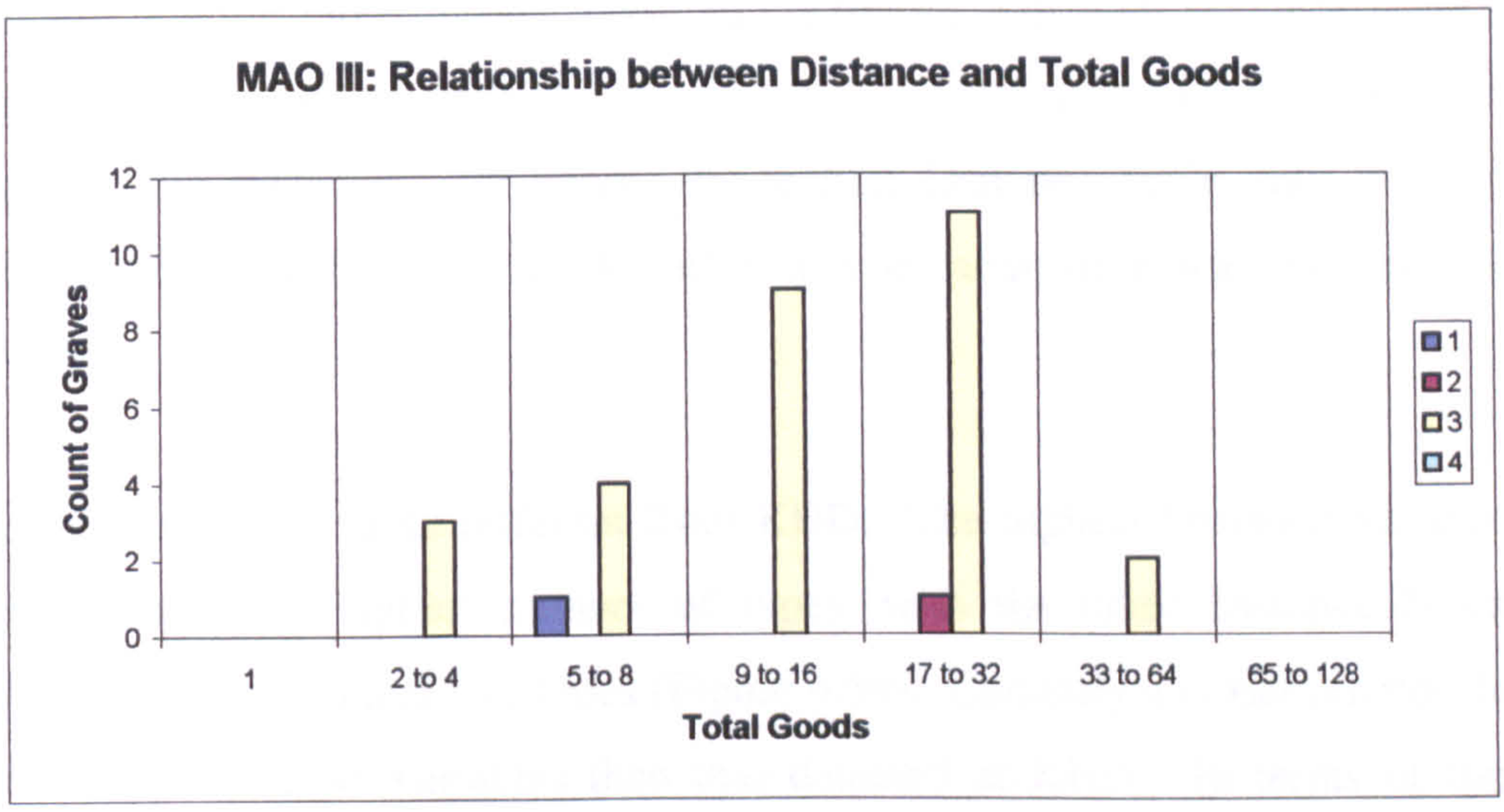


Figure 6.61: KHD and KN Relationship between Distance Scale and Total Goods





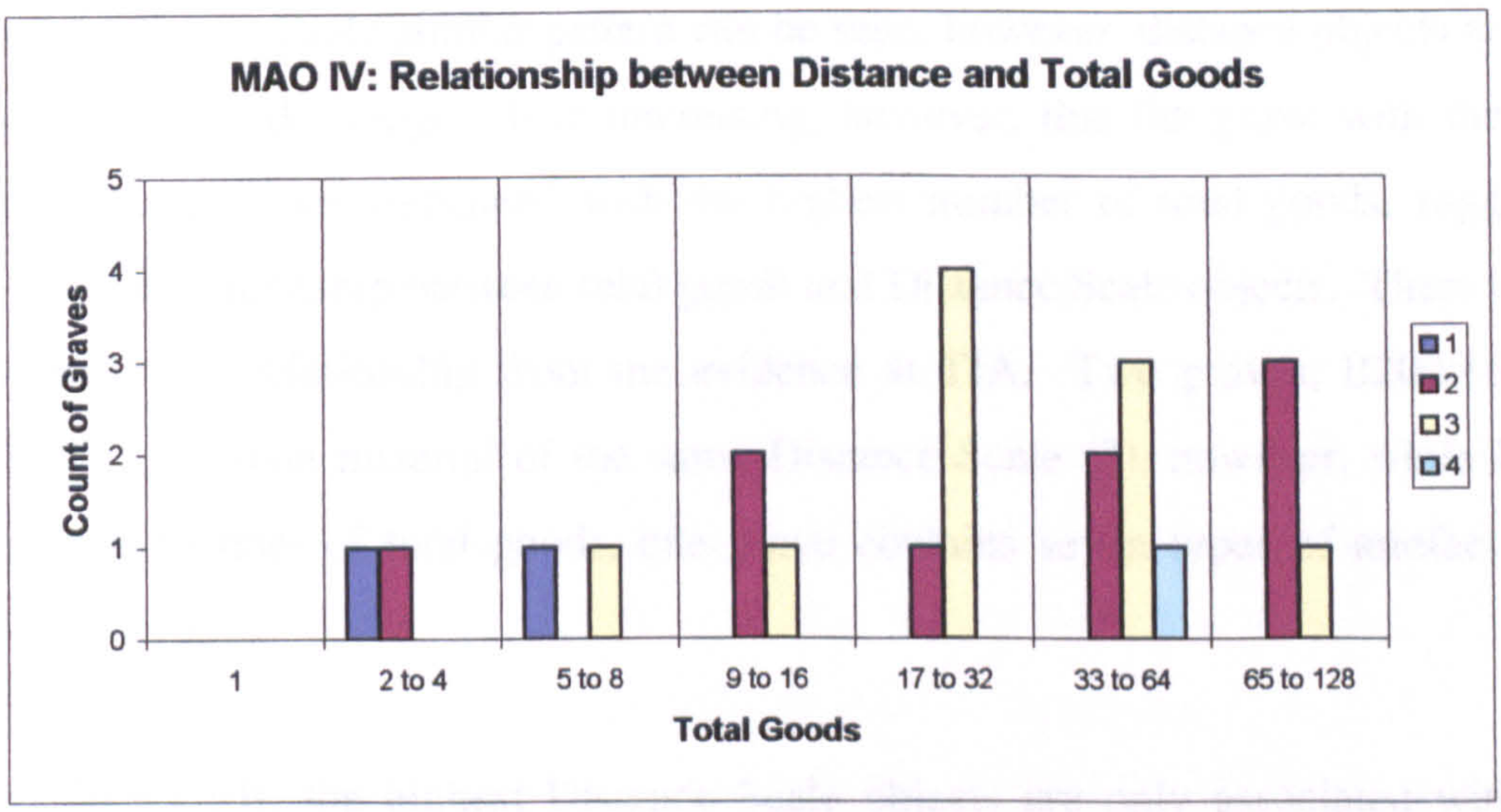


Figure 6.62: MAO Relationship between Distance Scale and Total Goods

Artefact Types and Total Goods: Distance Scale

From the diversity of results in Section 6.2.4.2, it is clear that grave size and Distance Scale represent two quite distinct indicators of effort. While we might expect graves with high Distance Scale objects to be uncommon in graves with a lower number of types and/or total goods, this is clearly not the case at KHD (Figure 6.59). The evidence from KHD shows rather that while low Distance Scale objects are restricted to graves of four types or less, those higher on the scale occur throughout the range of types. While it should be remembered that the Distance Scale rating is based on the most distant raw material within the grave, it is also clear from Figure 6.59, conversely, that it is not uncommon for high distance materials to be present as a single object type. There is quite a different relationship, however, between the presence of high Distance Scale materials and total goods at KHD. While we can see that Distance Scale 3 objects are present throughout the range of total goods, the highest Distance Scale only falls within the middle range of total goods. In the artefact types analysis it was present across a far wider range.

At KN the picture is quite different from KHD. The highest Distance Scale is directly associated with the highest number of types, with the other Distance Scale objects clustered between two and five types (Figure 6.59). Certainly a closer relationship seems to exist between these variables than that detected at KHD. In terms of total goods (Figure 6.61), a vaguely similar pattern can be seen, however, distance objects are spread across a much wider range. It is interesting, however, that the grave with the highest Distance Scale is not associated with the highest number of total goods, suggesting a more distant relationship between total goods and Distance Scale objects. There is further variation in this relationship from the evidence at TIA. Two graves, B200/160 1 and B200/170 1, contain material of the same Distance Scale (3), however, while having a comparable number of total goods, one grave contains seven types of artefact and the other only two.

During MAO I-II, the highest Distance Scale objects are only associated with graves containing between two and four types, with materials from other distances appearing at various points across the scale. There seems to be a slightly closer relationship with total

goods, with lower Distance Scale items generally at the lower end of the total goods scale, but the higher Distance Scale items persist in ranging across the scale (Figures 6.60 and 6.62).

By MAO III the sample suggests a consistently richer society, but notably there are no occurrences of the highest Distance Scale material. There is only one burial containing solely low Distance Scale objects, possibly indicating fewer graves only containing low distance materials, such as Egyptian alabaster. Such objects might now be more likely to co-occur with a wider range of types of materials from greater distances. The majority of Distance Scale graves are of scale 3, and these are, as usual, well distributed across the scale of both types and total goods.

The results of the analysis for MAO IV, however, show a return to greater variety in terms of distribution of Distance Scale objects throughout the range of number of artefact types. The highest and lowest Distance Scale objects do, however, stay at opposing ends of the scale. There is a great rise in the number of graves that do not exceed objects of Distance Scale 2, which is only comparable to KN. This indicates much more overall variety within the grave assemblages than witnessed during the MAO III phase. This provides further evidence to support MAO IV as a multi-tiered society, in contrast to MAO III, which shows stronger signs of limitation in terms of internal hierarchy, with poorer and richer graves but without the internal differentiation witnessed during MAO IV.

At KHD, as at KN, it seems that there is fair accessibility (across the range of total goods and numbers of types) for all but the highest Distance Scale objects present at a site. This would suggest that access to a variety of materials at the site might not have been restricted. It furthermore indicates that only the highest Distance Scale objects appear to have a direct relationship with wealth. It is also only at KHD and during MAO I-II that distance objects occur as the sole grave good(s). The difference exemplified during the earliest phase at MAO, however, might suggest that the early presence of the majority of distance objects is not inextricably linked to a show of status or prestige, as reflected through privileged access. The object(s) may rather have been valued for aesthetic

qualities, or acquired through non-regular contact with other communities. While it might also be considered that the simple placement of a high Distance Scale object may imply the elevated importance of a certain individual, I would strongly suggest that at this stage, either the impetus, the resources, or indeed ideology, to assert position through grave wealth were lacking.

A closer relationship is definitely perceived between artefact types and Distance Scale objects than with total goods. This is largely to be expected, since the increase in artefact types will correspondingly increase the probability of distance materials being present. The only site where this is not so apparent is MAO during phase I-II. As with grave size as an indicator of effort, there does not appear to be a universal link between grave good wealth, expressed either through total goods or artefact types, and the effort expended to acquire distance materials. These results express, in themselves, the need to view multiple variables when considering how position might be reflected through the mortuary evidence, especially it seems when we are dealing with earlier types of social organisation.

6.3 Summary of the analytical results

The use of a wide number of variables, coupled with a variety of analytical methods has certainly proved fruitful. The analysis has assisted in the interpretation of the nature of social organisation at the various sites and has revealed a number of similarities and differences on both an intra- and inter-site level. These similarities and differences help us to understand the dynamics that might have directed the changes in social organisation, and help us to understand why such different patterns are observable through the funerary record.

Here I will briefly summarise the main issues that have been highlighted through the results of the analysis and in Chapter 8 (General Conclusions) I will consider the implication of these results for our understanding of the changing nature of social organisation within the northeast Delta during the Terminal Predynastic to the Early Dynastic period, and how this region relates to and has been affected by changes within the whole of Egypt with the rise of the centralised state.

iastats: jaccard analysis

The results of the *jaccard* analysis highlight the homogenising affect of temporal contemporaneity on the mortuary record. Similarities are shown to exist between materials present at KHD, KN and MAO IV, materials that were either not present or not present in quantity during the earlier phases at MAO. A number of close associations have been identified between males/females and artefact types, relationships that give early indications as to the different roles held by men and women within these early communities. In addition, the results show that both males and females appear to have had relatively equal access to a variety of raw materials, and that the form of the artefact has a greater relationship with gender than the raw material. The intra-site analysis at MAO also highlighted the differential presence of certain types of grave goods/materials across time.

iastats: socistat analysis

This analysis further strengthens the contemporaneous similarities between KHD, KN and MAO IV in terms of consistency among the ranking of artefact types. It also indicates that certain materials, for example copper, appear to be more widely distributed at some sites than others. The intra-site analysis on the temporal phases of the MAO community highlights the stark differences in social structure that are apparent at different periods, and interestingly highlights that KHD shows a number of similarities to the earliest phase of the MAO community. Evidence pertaining to relationships between artefact types and sex become clearer, with a more consistent association between females and items of adornment observable throughout the phases. We also witness that although there is a rise in the number of male graves with a higher number of artefact types between MAO III and IV, it is clear that during both of these phases females are still associated with a greater number of types than males. The *socistat* analysis suggests great variety in the funerary provisions made for individuals of varying age, and raises the issue of whether we might detect the expression of grief, rather than inherited status, through the wealthy burial of a young adult.

Excel Single Variate Analysis

Through the frequency distribution analysis in this section the nature of the internal disparity in social organisation at MAO is also clarified, and the possibility for a hiatus phase between MAO I-II and III/IV strengthened. The appearance of more ideological variation in earlier bodily orientations suggests increasing uniformity over time. This suggests greater external contact through time, as does the increasing presence of potmarks, particularly where large numbers are found in single tombs. The potential role of the sites in trade is also clarified through this analysis. By observing distribution in terms of numerical frequency, KHD, while still displaying certain similarities to MAO I-II, is comparable with MAO IV when we consider the 'richer' and larger burials.

The analysis also provides clarity of artefact association by sex, in addition to the association of certain artefact types with ritual or function, and this widens the scope for inference on sex at other sites through MAO gender associations. A key element that comes out of this analysis is the possibility of observing funerary responses to a changing social environment. It becomes possible to make inferences regarding the conditions causing changes within grave provision and type: the lacking of impetus for elaboration through burial, insufficient external contacts or availability of resources, or the preference/need for other means of emphasis of status, for example legitimisation through association with ancestors.

Excel Bivariate Analysis

Changing gender dynamics become ever more apparent in this section: males have a closer association with large graves and higher number of total goods, while the female association with high numbers of artefact types persists, in addition to their having higher Distance Scale objects. It is also possible to hypothesise that the mortuary treatment of males might reflect their preferential involvement with the centralised state through access to larger amounts of objects and to the manpower required to expend the effort required for large and constructionally complicated graves. Variable treatment in relation to age also becomes more apparent, although children appear to be better provided for at MAO than at the other sites in terms of grave provisions, with children and young adults associated with large graves at MAO and TIA. Young adults at KHD, TIA and MAO IV

are well provided for as far as Distance Scale objects are concerned, but old adults remain poorly provided for at KHD both in terms of grave goods and grave size.

The results from this section stress that there are not simple relationships in terms of grave size, contents, sex/age and position. Changing relationships seen at MAO suggest the variable nature of the reflection of social differentiation through the medium of burial through time. This emphasises the point that we cannot expect to further our knowledge concerning social organisation unless we consider multiple variables, and pay due attention to the possibility of changing relationships between these variables and the age and sex of individuals both over time and between sites.

Image removed due to third party copyright

Figure 6.63: Selection of Ceramic and Stone Vessels from KHD (photograph courtesy of Prof. F. A. Hassan)

Image removed due to third party copyright

Figure 6.64: Stack of Ceramic Plates and Flint Knife from the Large Tomb 970 at KHD (photograph courtesy of Prof. F. A. Hassan)

Image removed due to third party copyright

Figure 6.65: Egyptian Alabaster Vessel with Potmark from the Large Tomb 970 at KHD (photograph courtesy of Prof. F. A. Hassan)

Image removed due to third party copyright

Figure 6.66: Egyptian Alabaster Boat-shaped Vessel from Grave 322 (MAO I; Kroeper and Wildung 1994, tafel 15)

Image removed due to third party copyright

Figure 6.67: Copper Mirror in Grave 93 at KHD (photograph courtesy of Prof. F. A. Hassan)

Image removed due to third party copyright

Figure 6.68: Copper Needles found in association with the Female in Grave 1027 at KHD (photograph courtesy of Prof. F. A. Hassan)

Image removed due to third party copyright

Figure 6.69: Copper Adze from Grave 1041 at KHD (photograph courtesy of Prof. F. A. Hassan)

Image removed due to third party copyright

Figure 6.70: Broken Copper Adze from KHD (photograph courtesy of Prof. F. A. Hassan)

Image removed due to third party copyright

Figure 6.71: Copper Fishhooks from KHD (photograph courtesy of Prof. F. A. Hassan)

Image removed due to third party copyright

Figure 6.72: Flint Blades found in association with the Female in Grave 1027 at KHD (photograph courtesy of Prof. F. A. Hassan)

Image removed due to third party copyright

Figure 6.73: Flint Knife from the Large Tomb 970 at KHD (photograph courtesy of Prof. F. A. Hassan)

Image removed due to third party copyright

Image removed due to third party copyright

Figure 6.74: Beads from Graves 946 (top) and 1024 at KHD (photograph courtesy of Prof. F. A. Hassan)

Image removed due to third party copyright

Figure 6.75: Palette from Grave 1038 at KHD (photograph courtesy of Prof. F. A. Hassan)

Image removed due to third party copyright

Figure 6.76: Fish-shaped Palette from Grave 305 (MAO I; Kroeper and Wildung 1994, tafel 21)

Image removed due to third party copyright

Figure 6.77: Ivory Needles from Grave 231 (MAO I; Kroeper and Wildung 1994, tafel 38)

Image removed due to third party copyright

Figure 6.78: Oval Ceramic Coffin (KHD Grave 1025) (photograph courtesy of Prof. F. A. Hassan)

Image removed due to third party copyright

Figure 6.79: Simple Oval Pit Burial (KHD Grave 1035) (photograph courtesy of Prof. F. A. Hassan)

Figure 6.80: Mud-brick Chambered Grave 2275 (MAO IV; Kroeper 1992, 135, fig. 7)

Figure 6.81: Mud-brick Lined Pit with Pottery Coffin (KN Grave 16; Bakr 1988, 58, pl. 4)

Image removed due to third party copyright

Figure 6.82: Orientation of Head to the North and Face to the East (Grave 964 KHD) (Photograph courtesy of Prof. F. A. Hassan)

Image removed due to third party copyright

Figure 6.83: Orientation of Head to the North and Face to the West (Grave 132 MAO I; Kroeper and Wildung 1994, frontispiece)

Image removed due to third party copyright

Image removed due to third party copyright

Image removed due to third party copyright

Image removed due to third party copyright

Figure 6.84: Potmarks on Ceramic Vessels at KHD (Photograph courtesy of Prof. F. A. Hassan)

Image removed due to third party copyright

Figure 6.85: *Serekh* of King Sekhen/Ka from Grave 1008 at KHD (Photograph courtesy of Prof. F. A. Hassan; Hassan 2000a, 38)

7 Results and Interpretation of Spatial Analysis at Kafr Hassan Dawood

7.1 Approaches to spatial analysis at Kafr Hassan Dawood

This second analytical chapter discusses the results of spatial analysis conducted on the data from Kafr Hassan Dawood (KHD). Access to the original site plans and records for KHD have enabled me to update the Geographical Information System (GIS) for the site and present the data from a spatial perspective (Figure 7.1; Section 4.1.4). My intention here is to illustrate the value of using spatial analysis as a complementary method to statistical analysis (cf. Chapman and Randsborg 1981, 15; Ellis 1996, 162), to compare the results with patterns evident in Chapter 6, and also discuss new patterns that might only be apparent from a spatial perspective.

I approach the spatial analysis by addressing five key questions:

1. What does the clustering of artefact types/materials suggest in terms of the expression of social differentiation, the elevated importance of certain individuals/groups, and changing access to resources/external contact?
2. Is clustering visible around larger tombs; might this suggest/represent local chieftains or family heads?
3. To what extent is it possible to determine differentiation and change within funerary ideology through the spatial organisation of the cemetery?
4. Is there evidence for preferred burial zones for females/males and children/adults?
5. Does the spatial distribution of potmarks inform regarding:
    a) Increasing capacity for on-site organisational needs?
    b) The degree of interaction with the centralised organisation of the rising state?

In terms of KHD site development, the first burials appear to have been made in the north-northeast of the cemetery, by the ancient floodplain (the edge of which was found during test-pitting in the 1999 season), with the cemetery spreading south-southeast over time, with one notable exception that will be discussed below (Hassan 2000a, 39; Rowland and Hassan 2003, 420, 421; Hassan *et al* in press). The results of augering along the edge of the floodplain suggest the existence of an early settlement there (Hassan 2000a, 38).

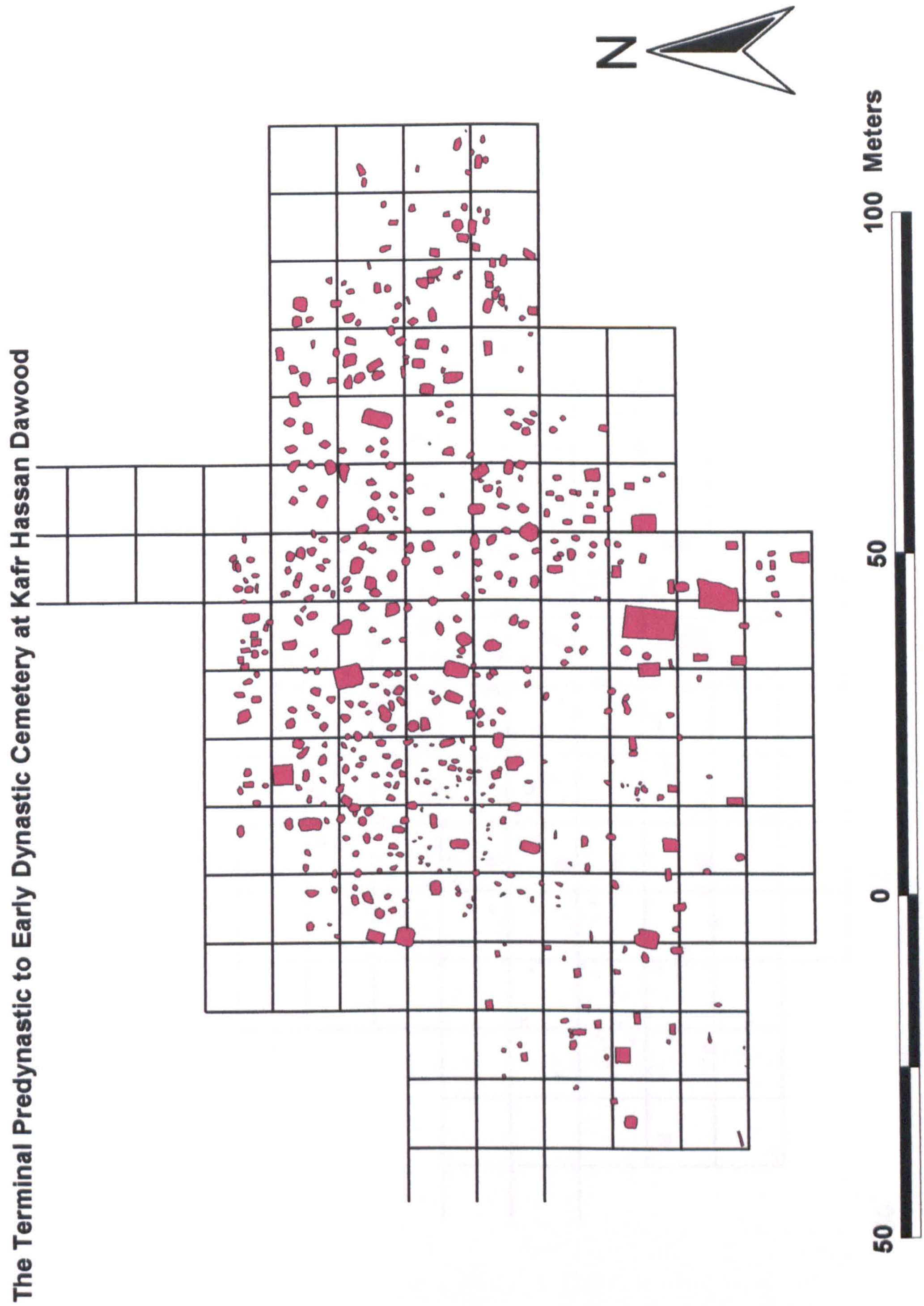


Figure 7.1: The Terminal Predynastic to Early Dynastic cemetery at KHD

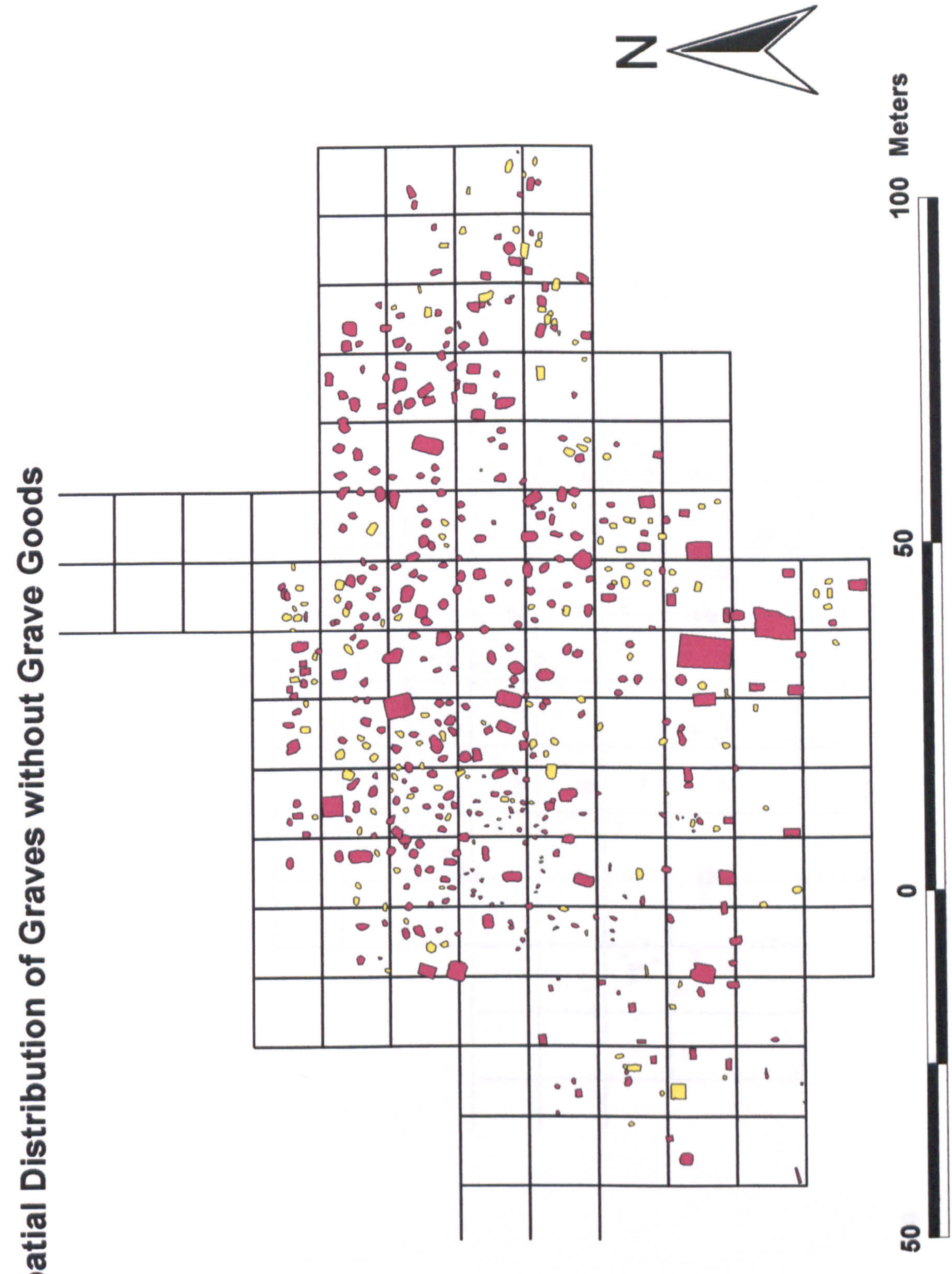


Figure 7.2: Graves without Grave Goods (highlighted in yellow)

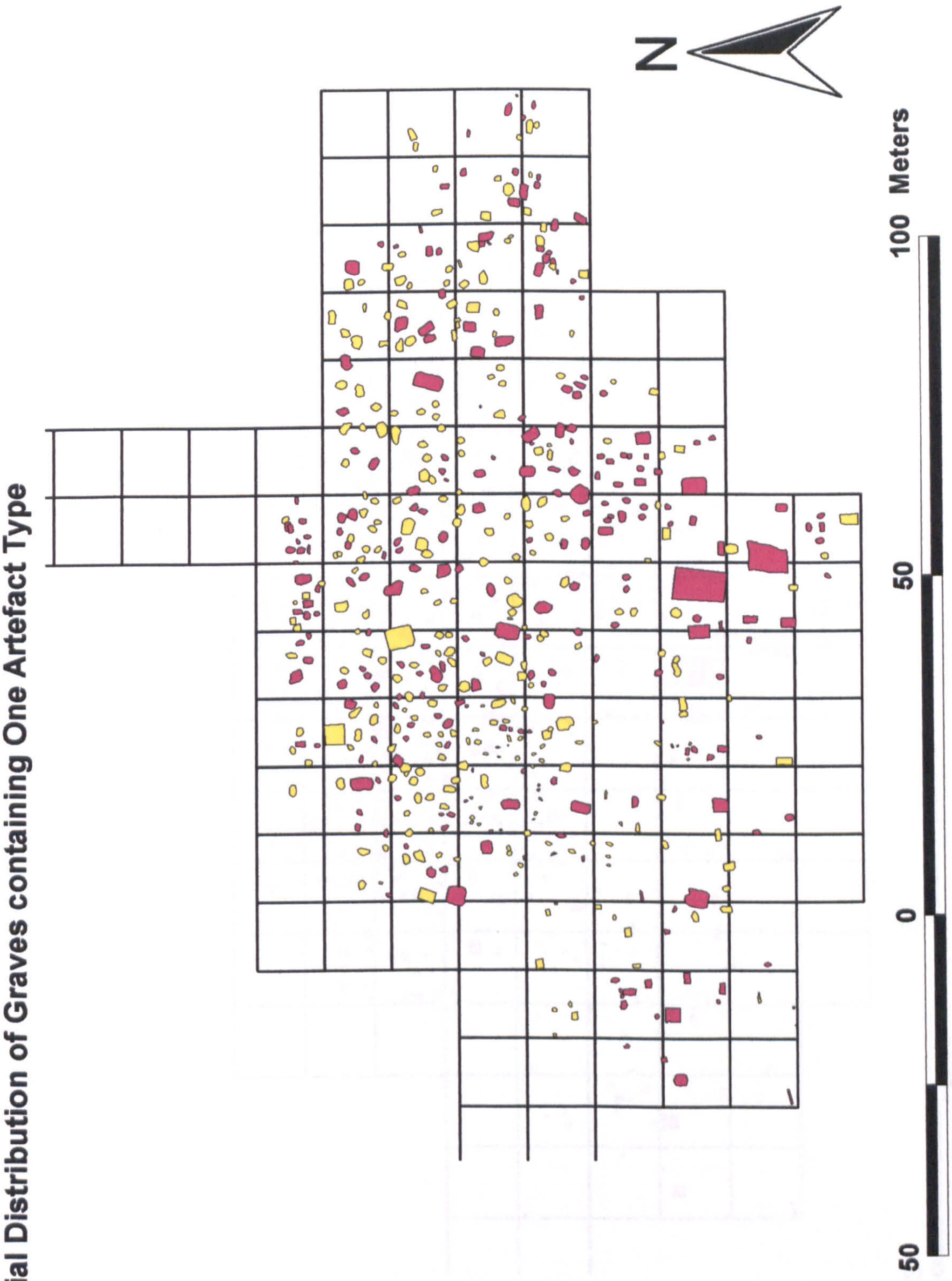


Figure 7.3: Graves with One Artefact Type (highlighted in yellow)

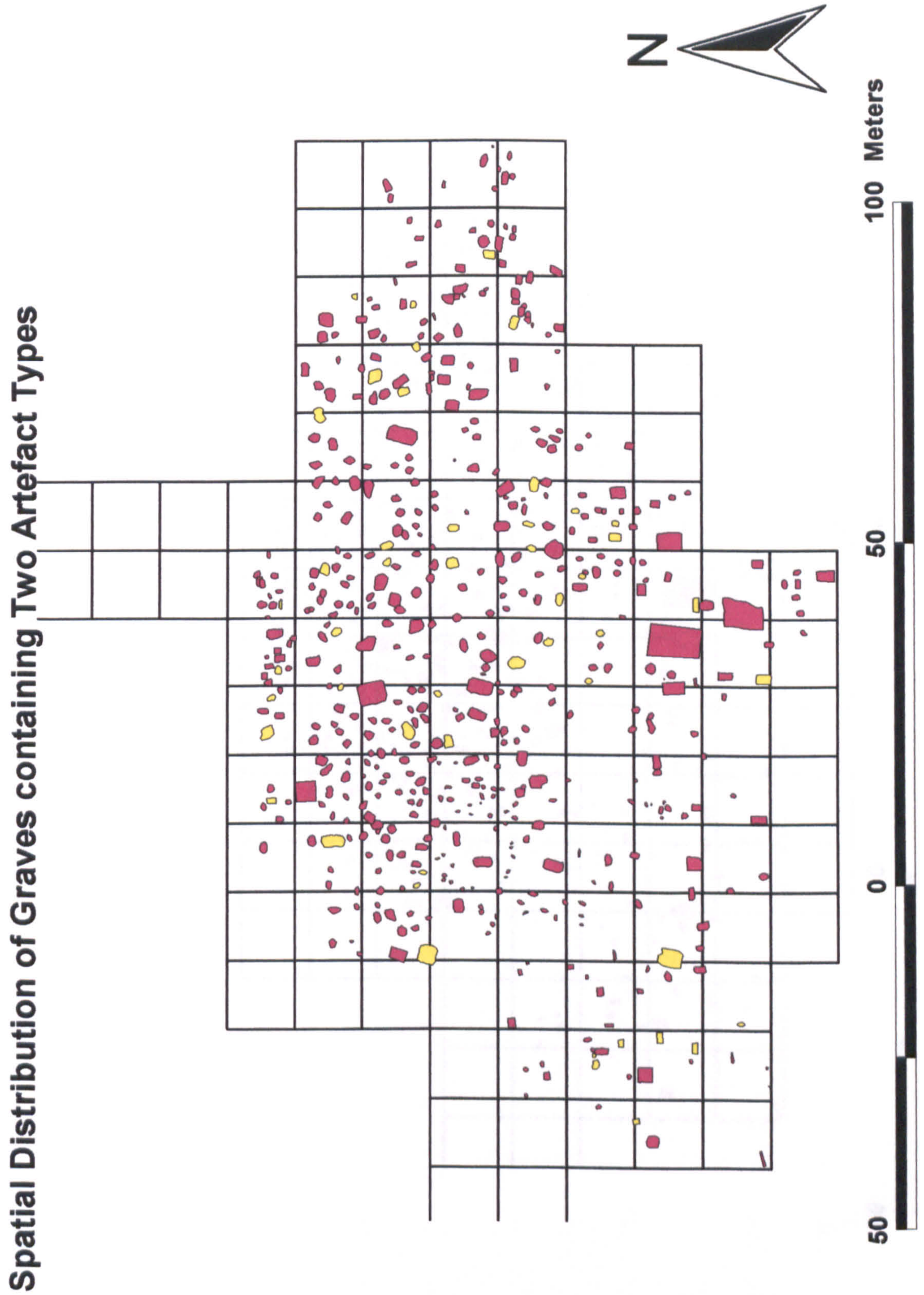


Figure 7.4: Graves with Two Artefact Types (highlighted in yellow)

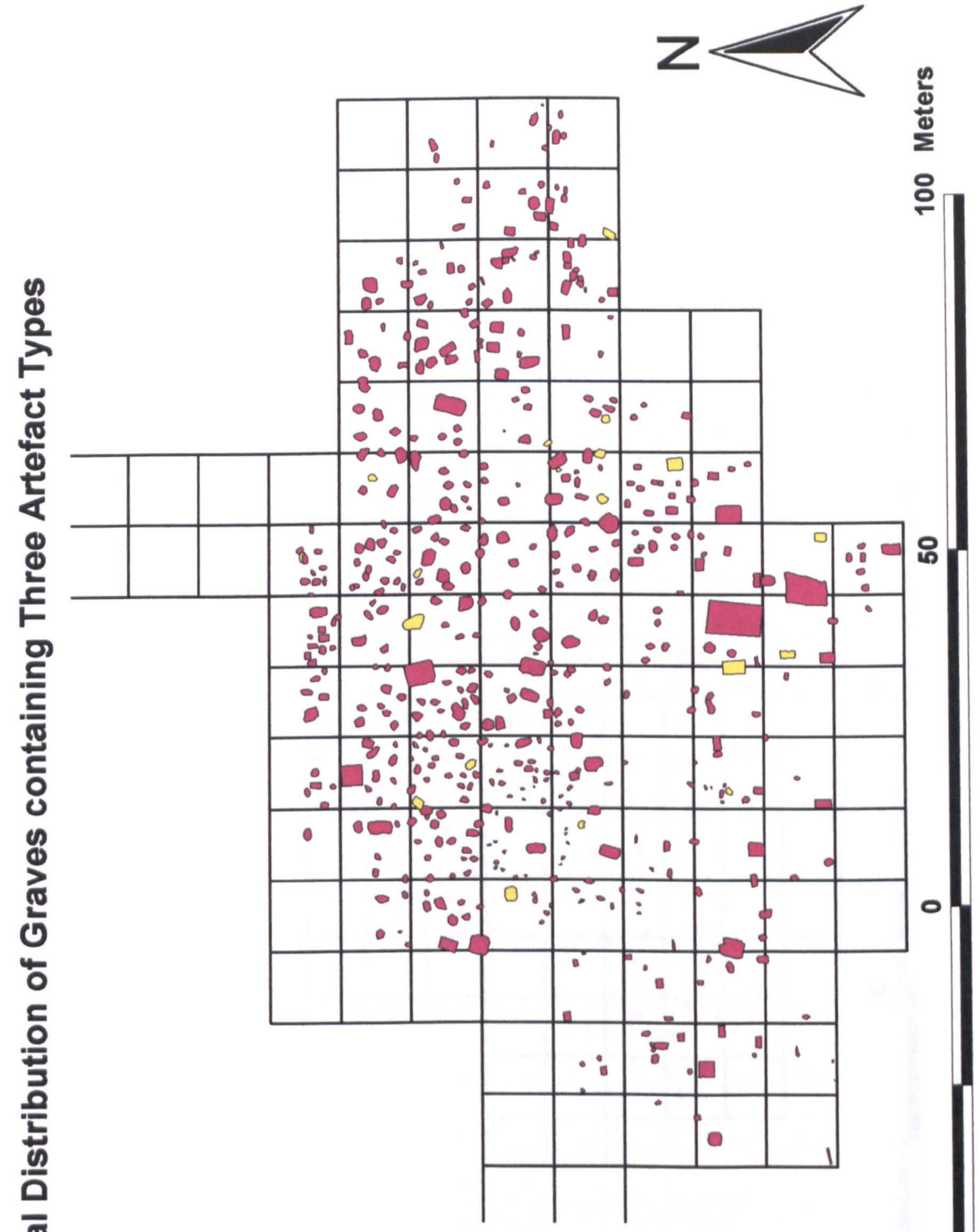


Figure 7.5: Graves with Three Artefact Types (highlighted in yellow)

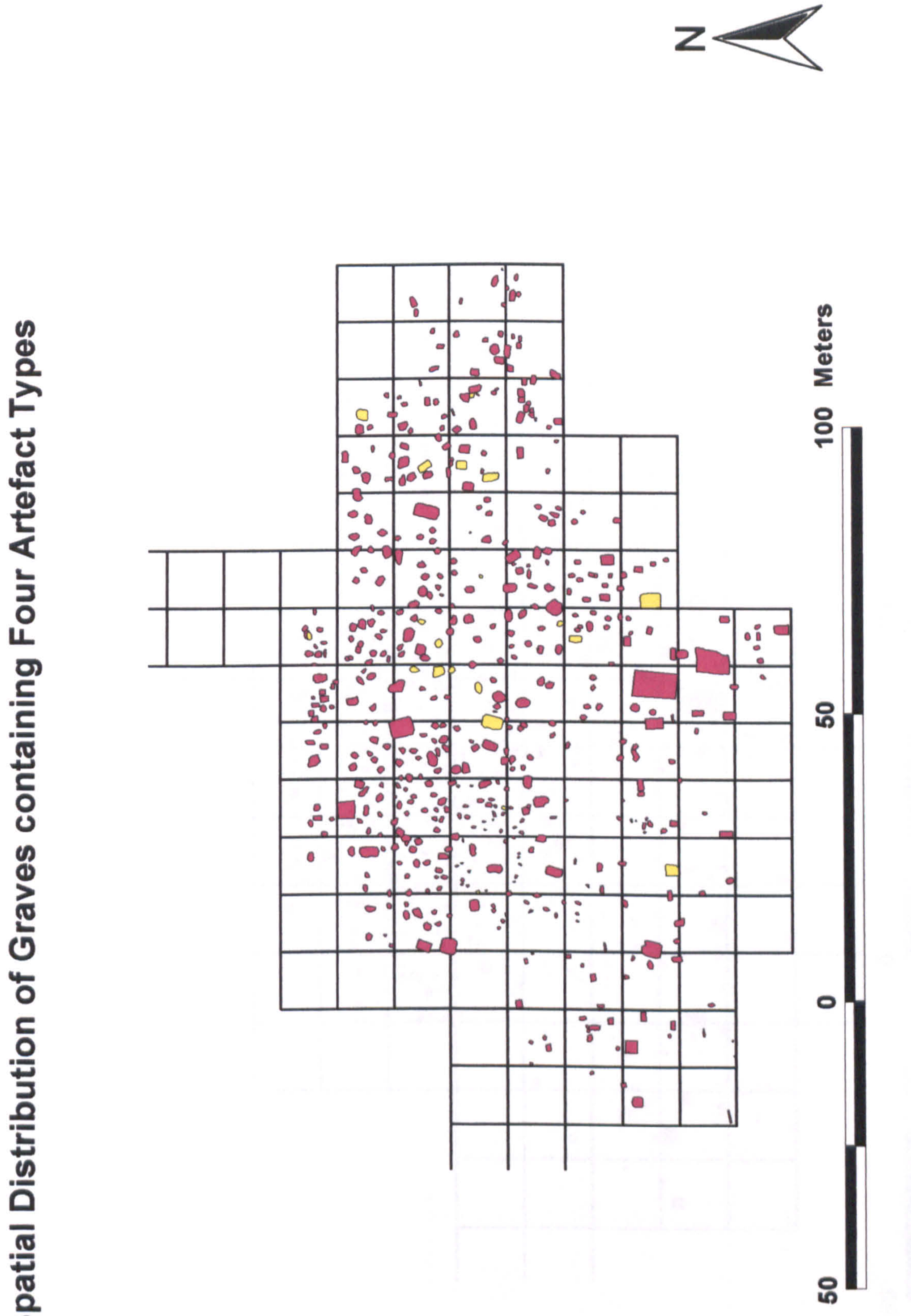


Figure 7.6: Graves with Four Artefact Types (highlighted in yellow)

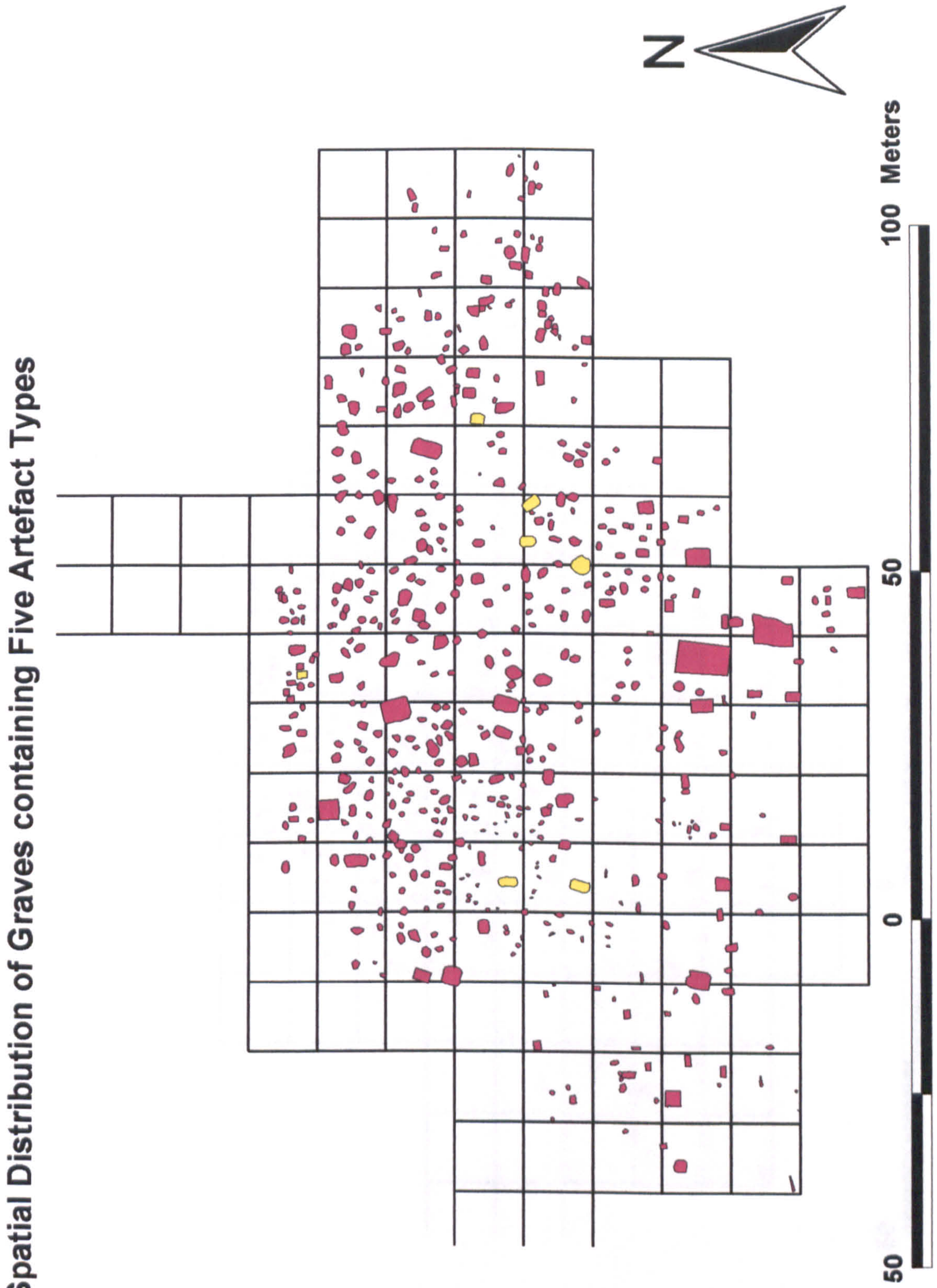


Figure 7.7: Graves with Five Artefact Types (highlighted in yellow)

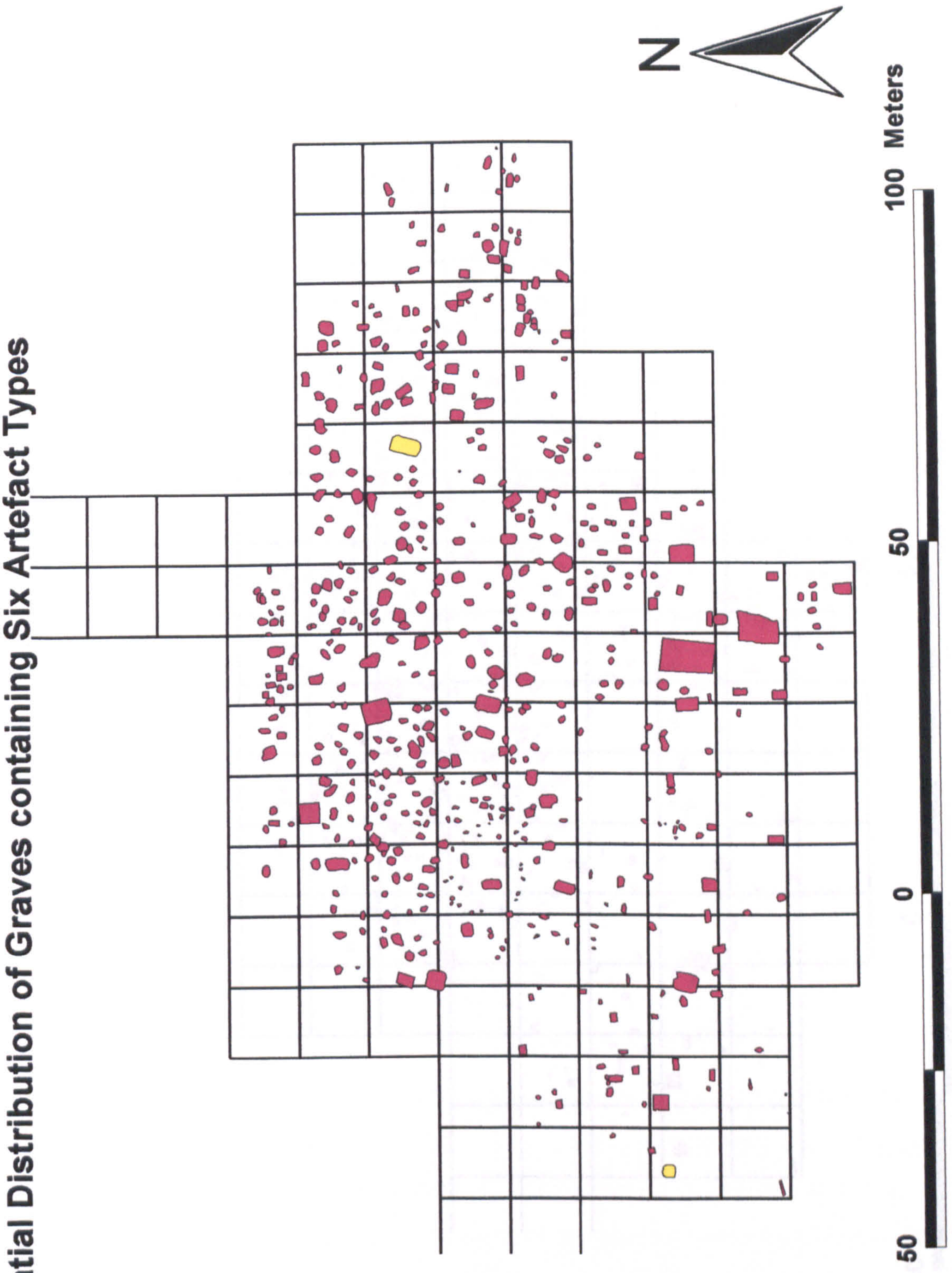


Figure 7.8: Graves with Six Artefact Types (highlighted in yellow)

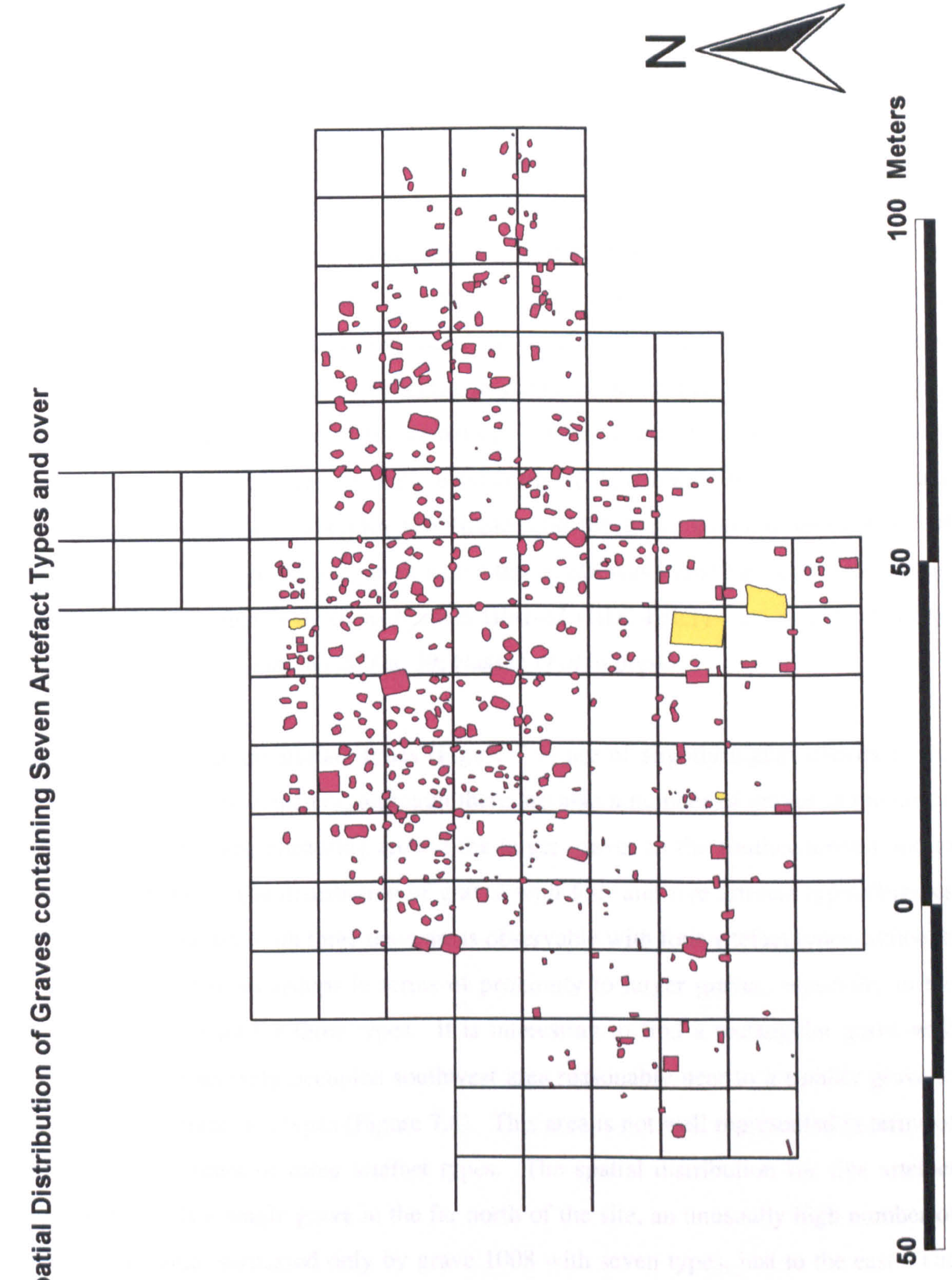


Figure 7.9: Graves with Seven Artefact Types and over (highlighted in yellow)

7.1.1 Spatial distribution of artefact types and materials

Artefact Types

Figures 7.2-7.9 show the spatial distribution of graves containing no grave goods at all, and then graves from one type up to seven and more types. Graves containing no objects are spread across the site but are particularly densely clustered in the northeast, with smaller clusters in the east and south. The majority of the very smallest graves are covered within this distribution. There is a higher density of graves containing low number of artefacts in the north and northeast of the cemetery, and notable sparsity of graves in this area with in excess of two artefact types. I would infer from this that if the north/northeast does generally represent the earlier burials at KHD then social differentiation through burial, as reflected in numbers of artefact types, is not striking during the early development of the cemetery. There is one clear exception, however, grave 1008, notably the largest oval grave excavated to date in the cemetery. In this early grave a *serekh* of King Sekhen/Ka was found, and the grave contains seven different artefact types. The large storage jar on which the *serekh* was found has been compared to a jar from Helwan that is dated to Naqada IIIa1-c2 (IID2-IIIC1) (van den Brink 1996, 137-138; 2001, 52, 93; Hassan 2000a, 39; Hassan *et al* in press).

Graves containing three artefact types (Figure 7.5) are of slightly higher density in the south/southeast of the cemetery, although there are also a number of graves in the north. There is possibly some clustering around the larger graves in the south/southeast and in the north/northeast. The distribution of graves with four and five artefact types (Figures 7.6-7.7) shifts slightly, with three main areas observable with four artefact types, although showing different relationships in terms of proximity to larger graves, especially in the northeast corner, than for three types. It is interesting to find a rectangular grave with four types in the sparsely occupied southwest area reasonably near to a smaller grave to the west that contains six types (Figure 7.8). This area is not well represented in terms of graves with in excess of three artefact types. The spatial distribution for five artefact types also reveals a single grave in the far north of the site, an unusually high number of types for this area, surpassed only by grave 1008 with seven types, just to the east. The graves with six+ artefact types (Figures 7.8-7.9) are very sparsely distributed across the

cemetery, and while the largest graves may be restricted to the far south, a high presence of artefact types is not.

Following the spatial distribution of graves with one to two artefact types present (Figures 7.3-7.4), showing a scattered distribution across the cemetery, the graves with higher numbers of types appear increasingly clustered into groups. This may well suggest different burial areas for individuals of important standing within the community during different periods, or it may suggest different kin groups living contemporaneously within the cemetery (cf. Goldstein 1981, 57). It will only be possible to be more certain of this when the graves have been more precisely dated. It is only in what may be the penultimate phase of the cemetery's use that we see tombs reflecting position and prestige both through size, range of artefacts, and large quantities in terms of total goods, and potmarks (Section 7.1.5). This does not necessarily reflect the most prosperous period for the whole community; it may suggest rather the increase of inequality within the community, greater contact with other communities and a closer relationship with the centralised organisation in Egypt (cf. Service 1962, 163-164; Yoffee 1993, 71; Parker Pearson 1999, 85).

The main difference between the two largest tombs in the south (913 and 970) and grave 1008 in the north of the site (with seven artefact types), is observable most obviously in size, but also in the difference of types and higher quantities of stone and ceramic vessels in the southern tombs. It would seem viable to suggest that this phase is marked by greater external contact, and greater access to large quantities of non-local goods, and the assertion of control in terms of manpower (cf. Service 1962, 163-164).

In addition to exploring the spatial distribution in terms of number of artefact types, it is also important to look to the spread of specific types of artefacts, and I will discuss here key points arising from these distributions.

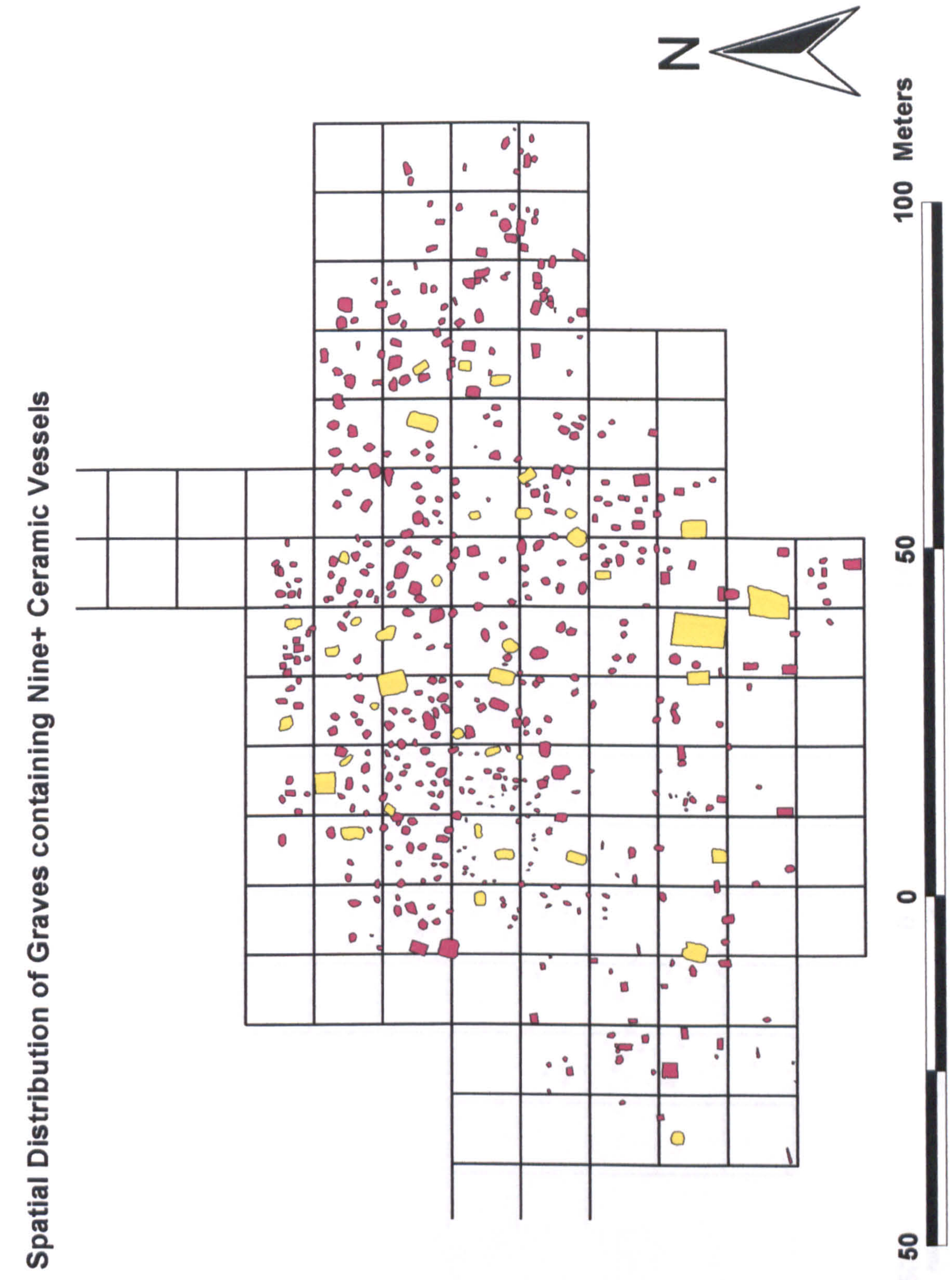


Figure 7.10: Graves with Nine+ Ceramic Vessels (highlighted in yellow)

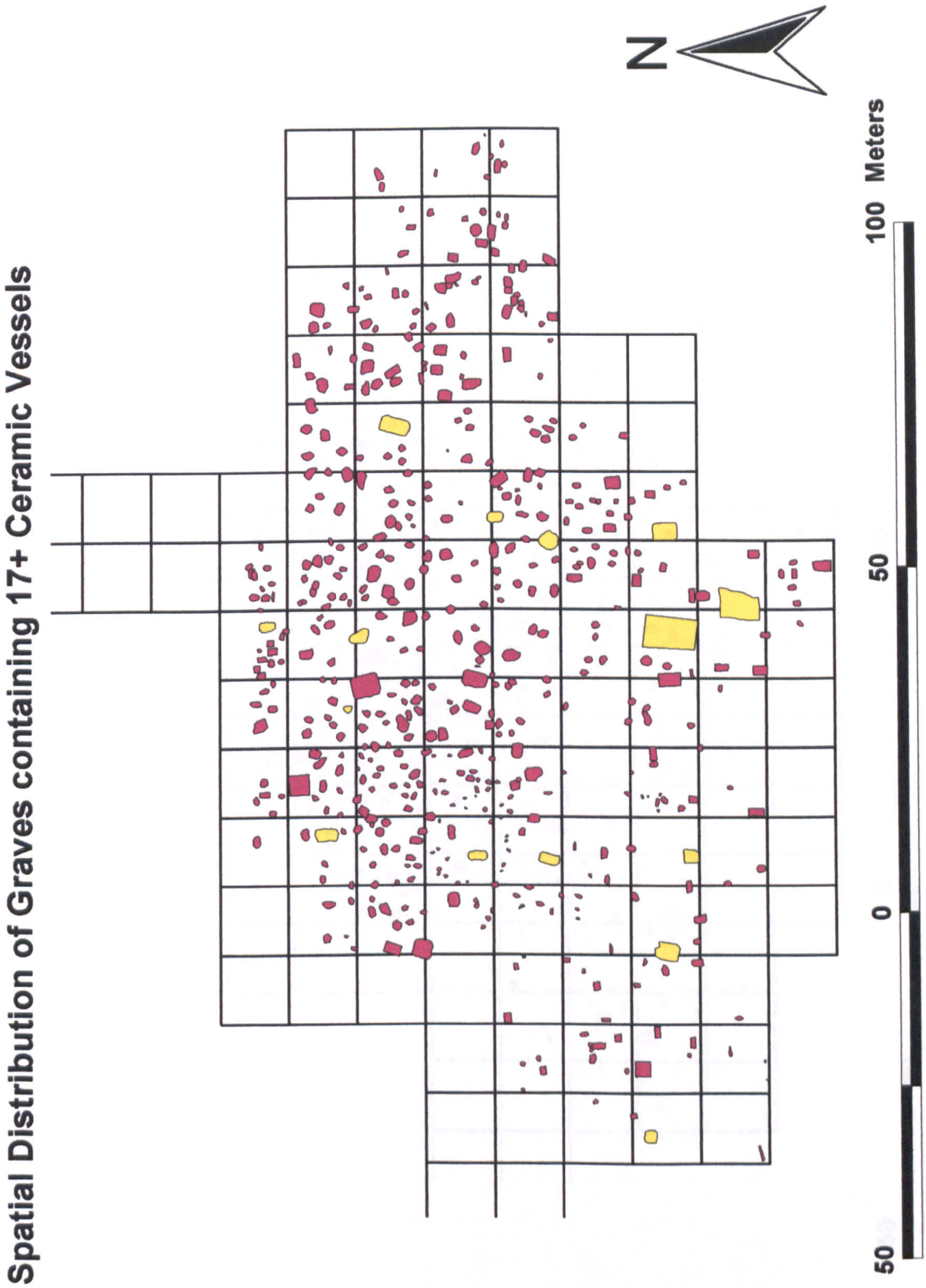


Figure 7.11: Graves with 17+ Ceramic Vessels (highlighted in yellow)

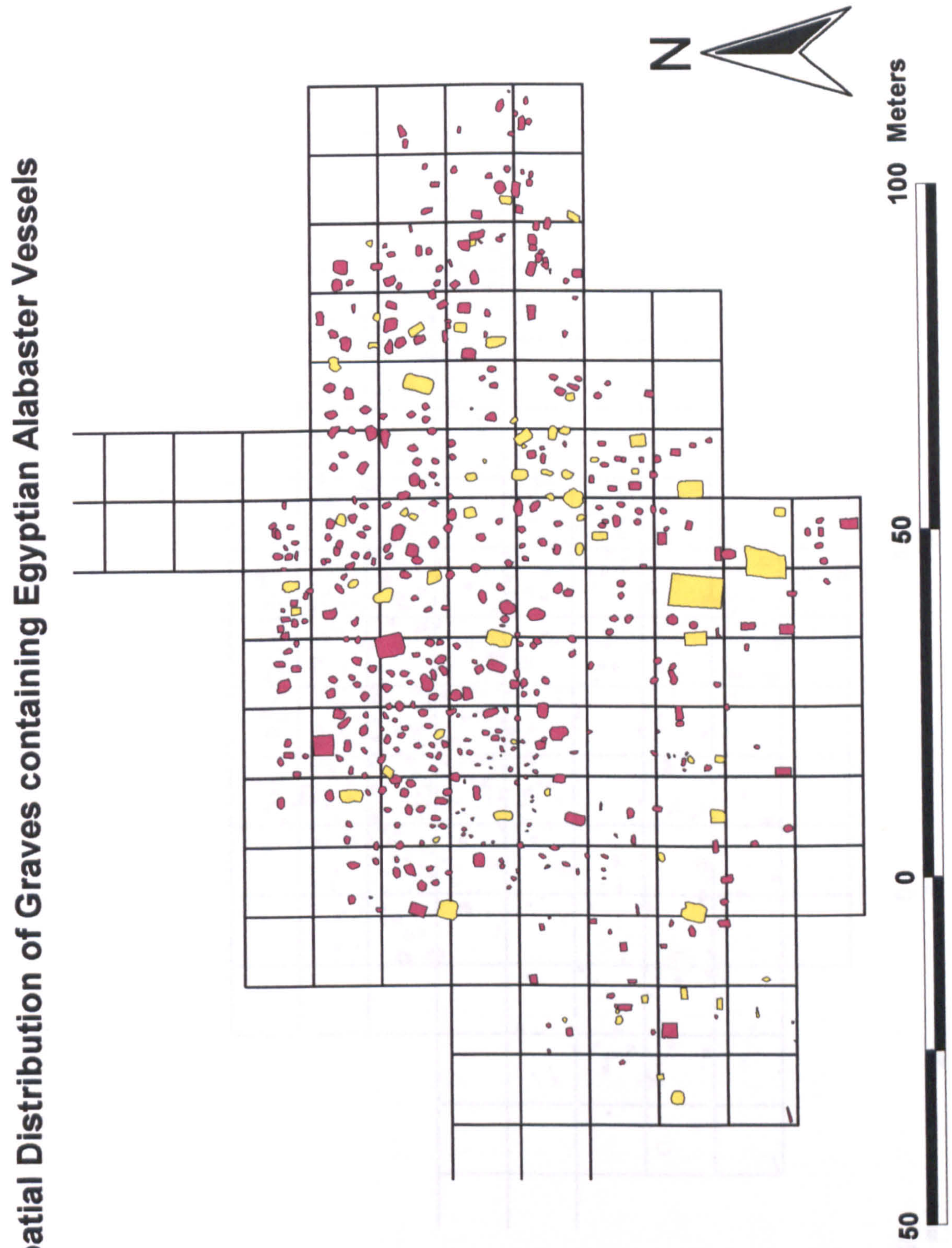


Figure 7.12: Graves with Egyptian Alabaster Vessels (highlighted in yellow)

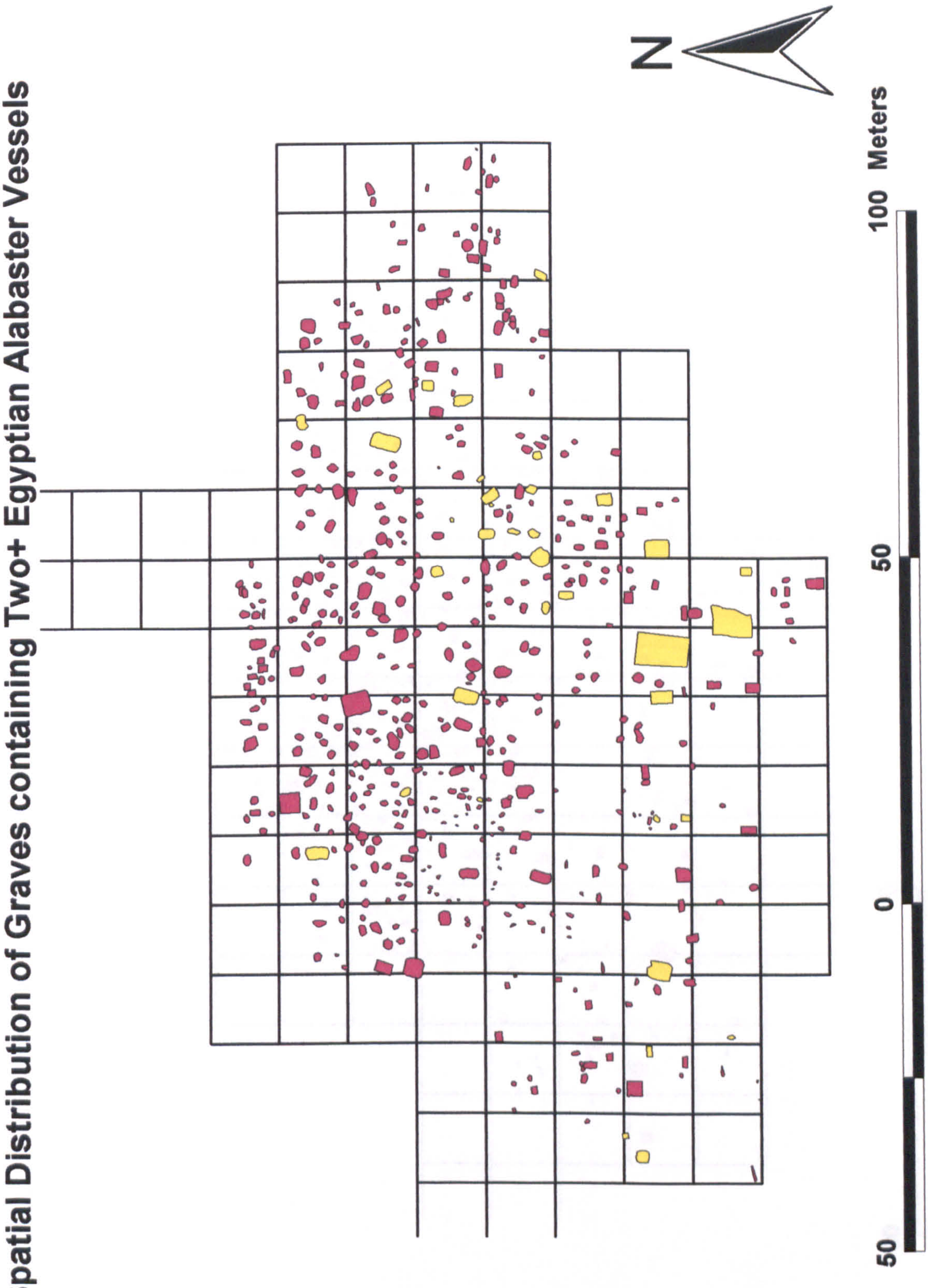


Figure 7.13: Graves with Two+ Egyptian Alabaster Vessels (highlighted in yellow)

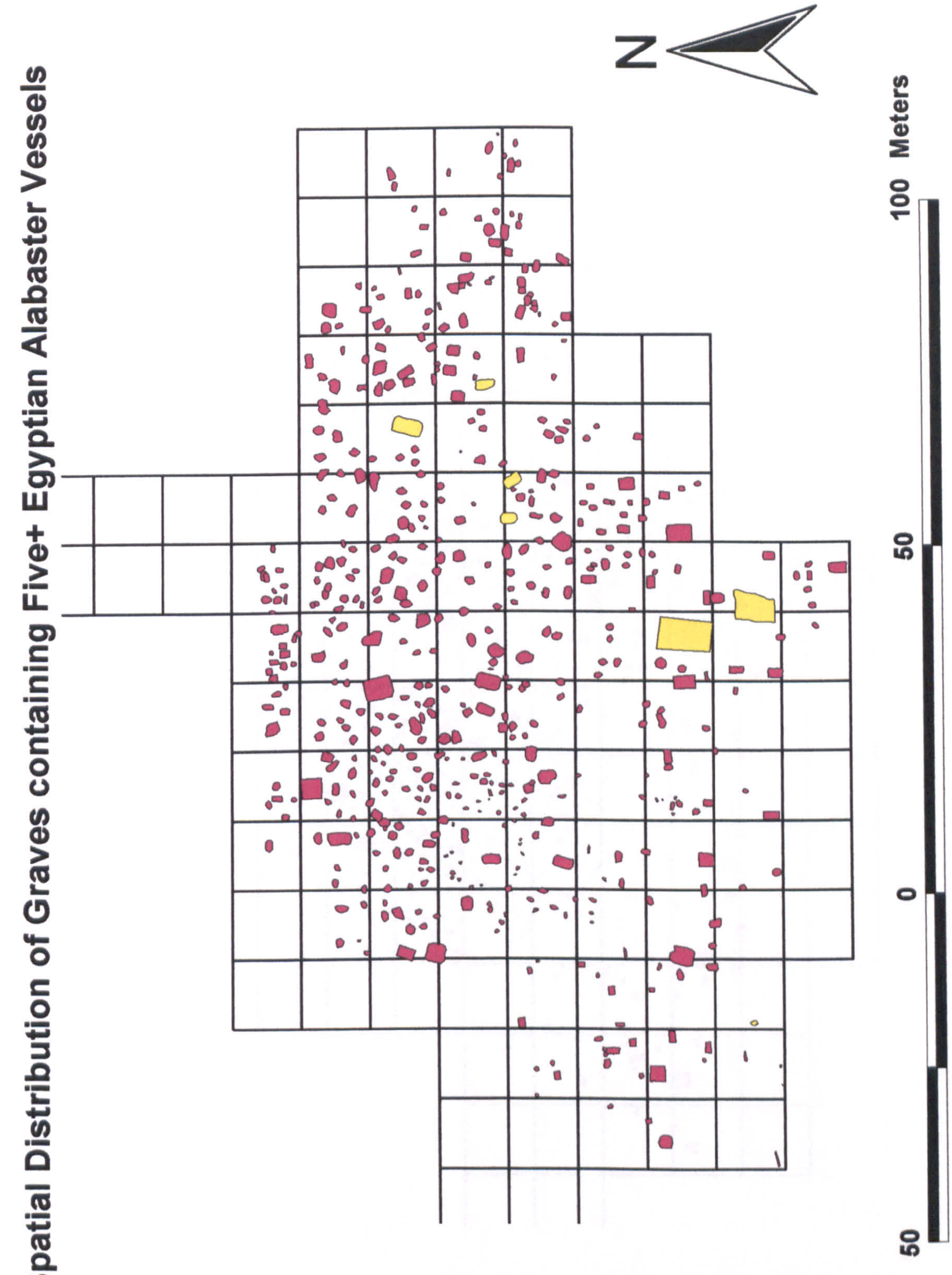


Figure 7.14: Graves with Five+ Egyptian Alabaster Vessels (highlighted in yellow)

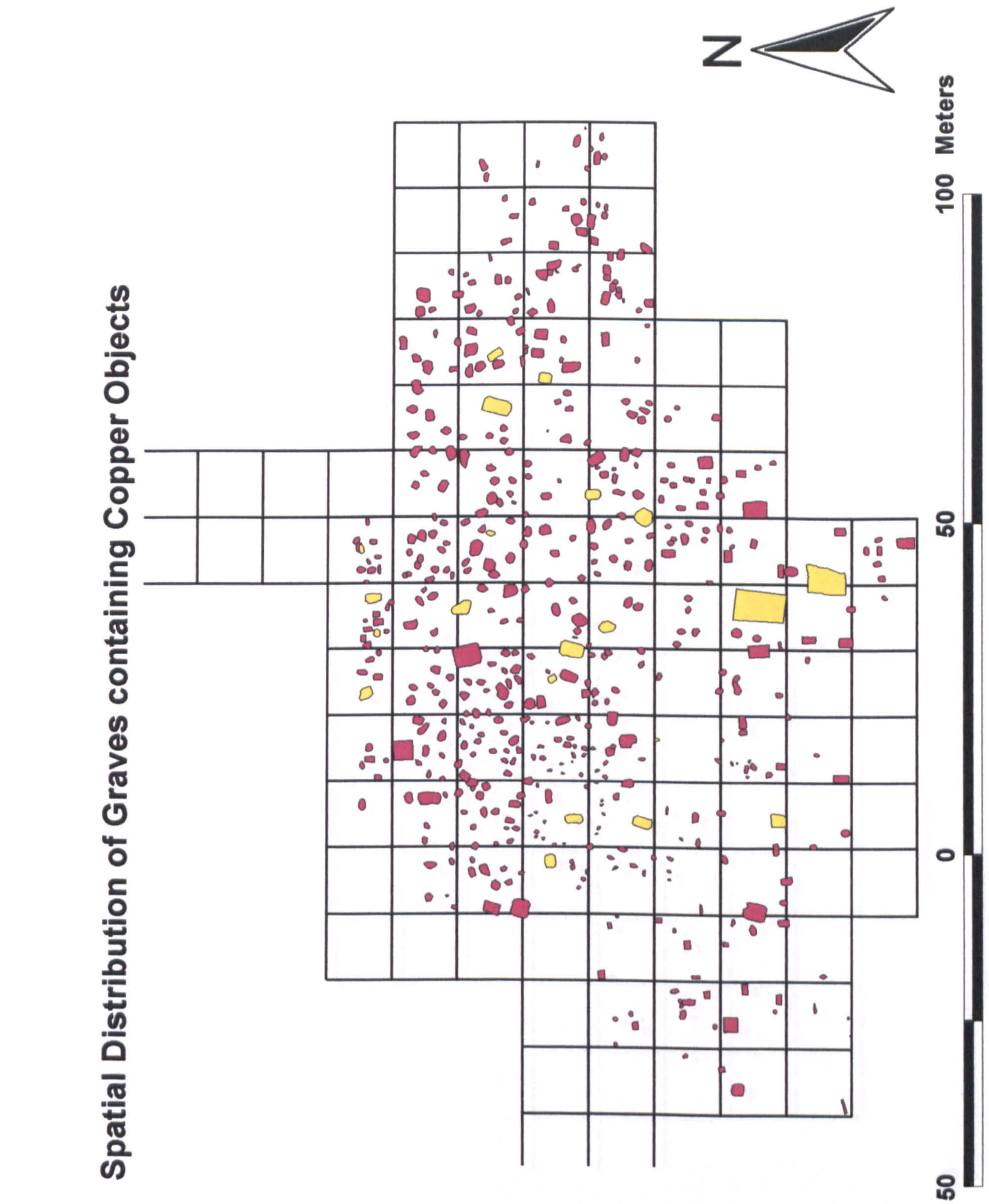


Figure 7.15: Graves with Copper Objects (highlighted in yellow)

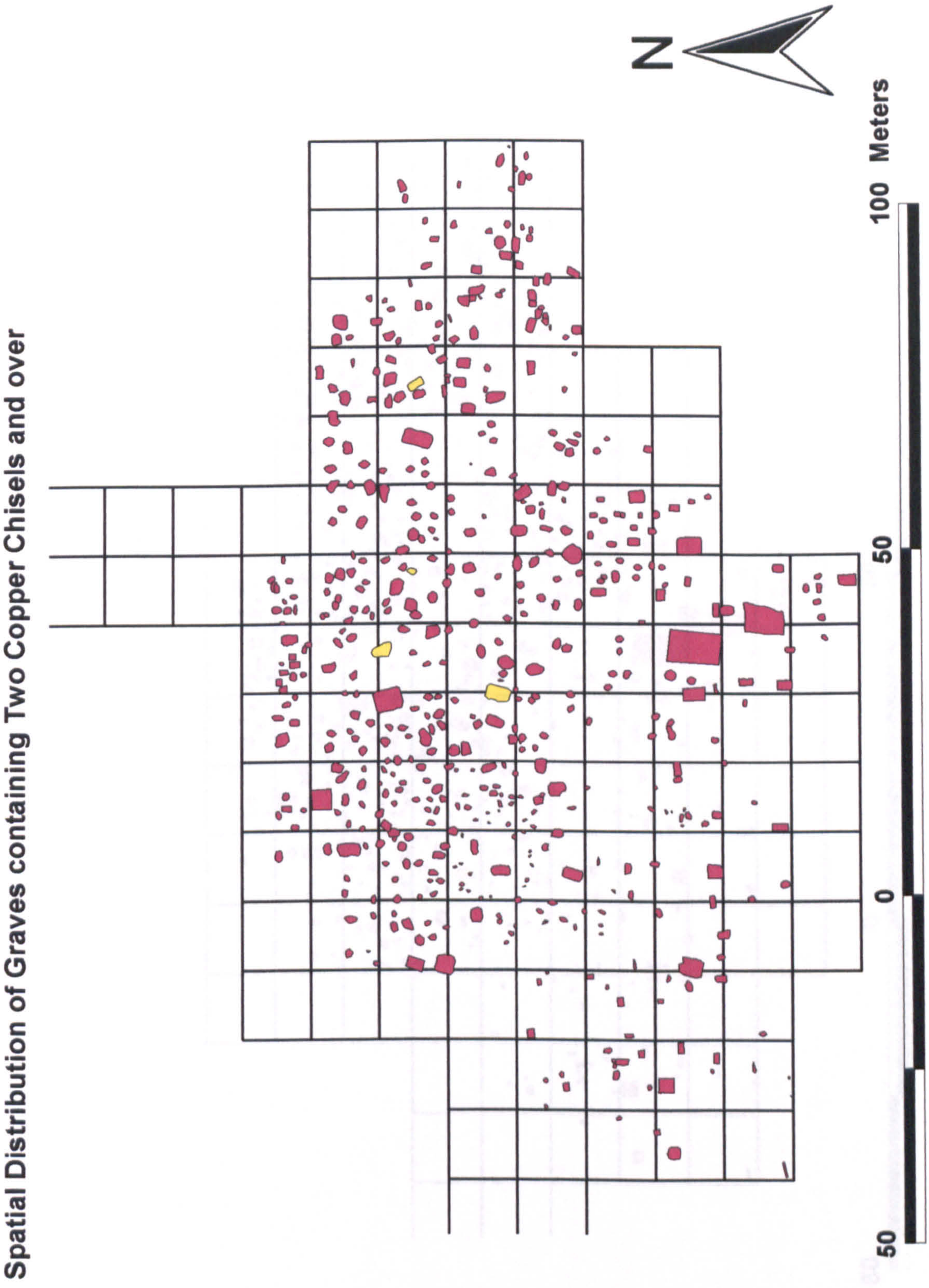


Figure 7.16: Graves with Two Copper Chisels and over (highlighted in yellow)

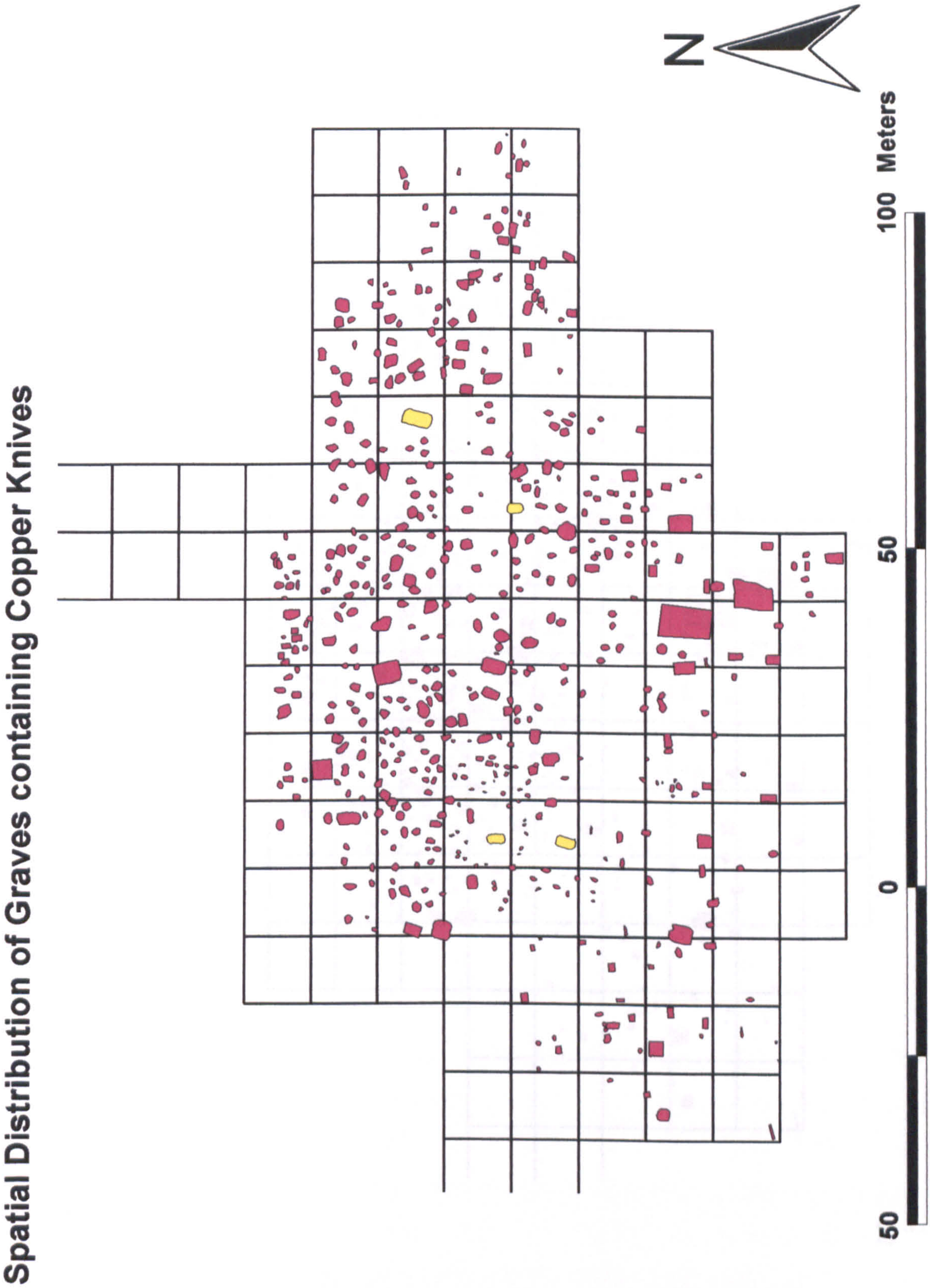


Figure 7.17: Graves with Copper Knives (highlighted in yellow)

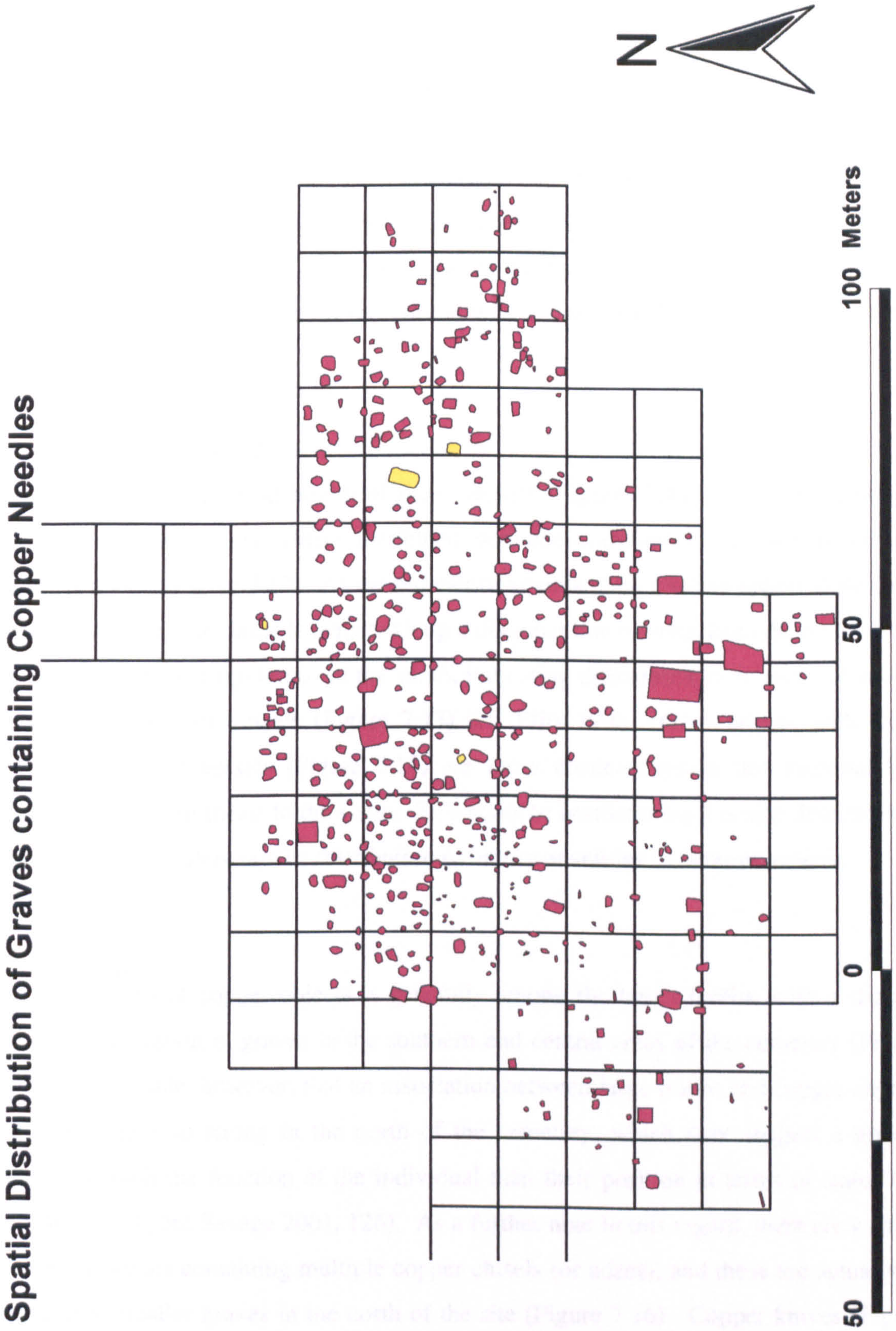


Figure 7.18: Graves with Copper Needles (highlighted in yellow)

Ceramic Vessels

The spread of ceramic vessels of varying totals is well distributed across the site. However, graves containing lower quantities of vessels are most dense in the north of the cemetery. Graves containing nine and more ceramic vessels (Figures 7.10 and 7.11) remain distributed across the cemetery, although it is notable that graves with 17 and over vessels are slightly more densely concentrated in the south than the north of the site. It is noteworthy that the other key difference between the distributions of nine and over and 17 and over vessels is in the size of the graves, with a fewer smaller graves present in the latter distribution.

Egyptian Alabaster Vessels

Looking at the spatial distribution of these vessels (Figures 7.12-7.14), it is clear that single vessels are the most widely distributed, with concentrations in the north/northwest, in the southwest (Figure 7.12). As the number of vessels rises, clusters appear to be more spatially discrete, with notable density along a diagonal line running from the northeast of the cemetery to the large tombs in the south, indicating differentiation in terms of access to larger numbers of vessels (Figure 7.13) (cf. Ellis 1996, 160). Graves with five+ Egyptian alabaster vessels (Figure 7.14) are more concentrated in this diagonal line running from the northeast to the south. This south to northeast band is also detectable in Figures 7.10-7.11, showing the distribution of higher quantities of ceramic vessels.

Copper Objects

The distribution of copper objects is generally among the larger tombs, with a slightly higher concentration in graves in the southern and central areas of the cemetery (Figure 7.15). It is notable, however, that an association between large tombs and copper objects does not appear so strong in the north of the cemetery, which may suggest a greater association with the function of the individual than their position in terms of status (cf. Goldstein 1981, 56; Savage 2001, 126). As a further note in this regard, there are a small number of burials containing multiple copper chisels (or adzes), and these are actually to be found in smaller graves in the north of the site (Figure 7.16). Copper knives (Figure 7.17) and needles (Figure 7.18) are restricted to the northern and central areas; it is worth remembering that it was only in the earliest phase at Minshat Abu Omar (MAO) (I-II)

that copper needles were found. Two of the graves in the north (KHD) with knives also contain chisels, and one grave contains a chisel, four knives, and three needles of copper (see Sections 6.2.2-6.2.3). This evidence gives further weight to the hypothesis that the deceased's role within the community either a) involved actual metalworking, or b) utilised the metal tools in the production/manufacture of other goods (see Sections 6.2.2-6.2.3). An alternative reason for the presence copper chisels, and specifically broken ones, is their use within the funerary ritual (Section 6.2.3).

Stone Vessels

The distribution of stone vessels occurs across the site (Figure 7.19). However, looking at graves with two+ vessels (Figure 7.20) the distribution is again largely clustered along the diagonal line running from the south to north east of the cemetery (as noted for graves with high numbers of ceramic vessels and also for graves containing five+ Egyptian alabaster vessels). A few single stone vessels are found in smaller graves, but the majority, especially in the case of multiple stone vessels, are associated with larger tombs. There are very few graves with stone vessels (excluding Egyptian alabaster) in the extreme north of the site, although notably grave 1008 contains one, possibly basalt or black limestone, vessel (Hassan *et al* in press). This distribution suggests that non-Egyptian alabaster stone vessels were harder to acquire, especially in quantity, which may reflect that the early inhabitants of KHD had a less developed network of contacts outside of their community; it may also reflect the lack of internal competition for the earlier community and certainly the lack of impetus to furnish the grave with such items.

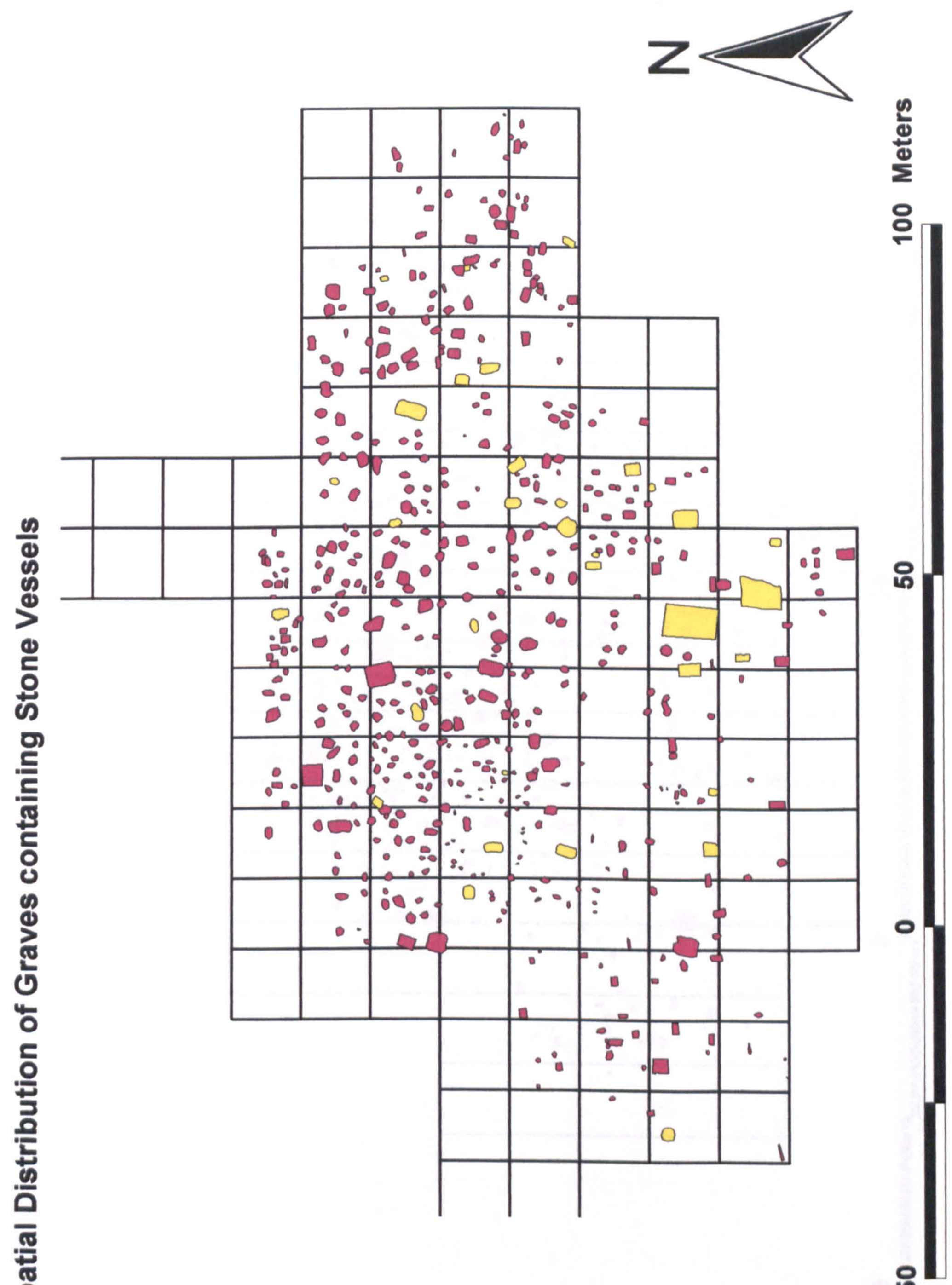


Figure 7.19: Graves with Stone Vessels (highlighted in yellow)

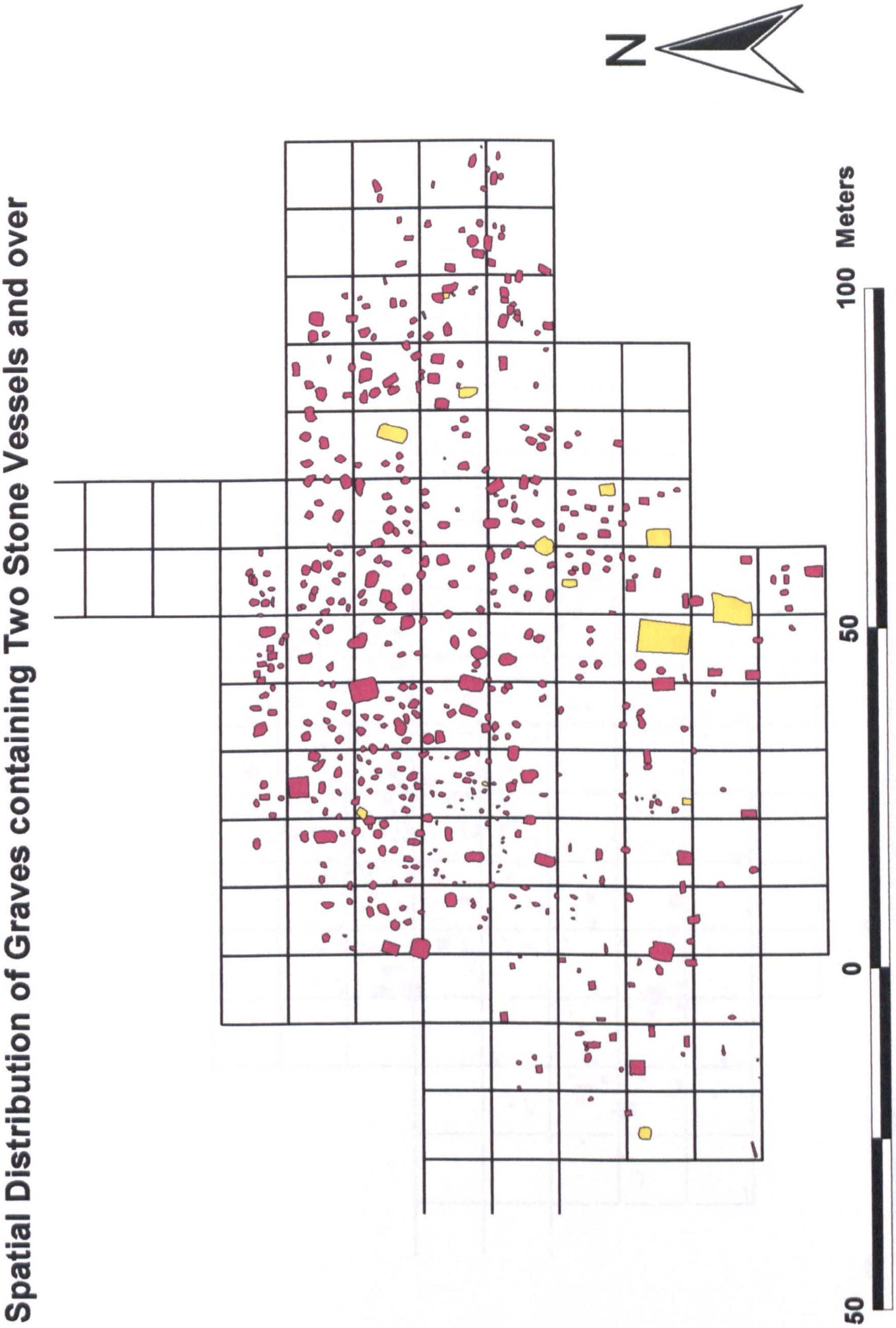


Figure 7.20: Graves with Two Stone Vessels and over (highlighted in yellow)

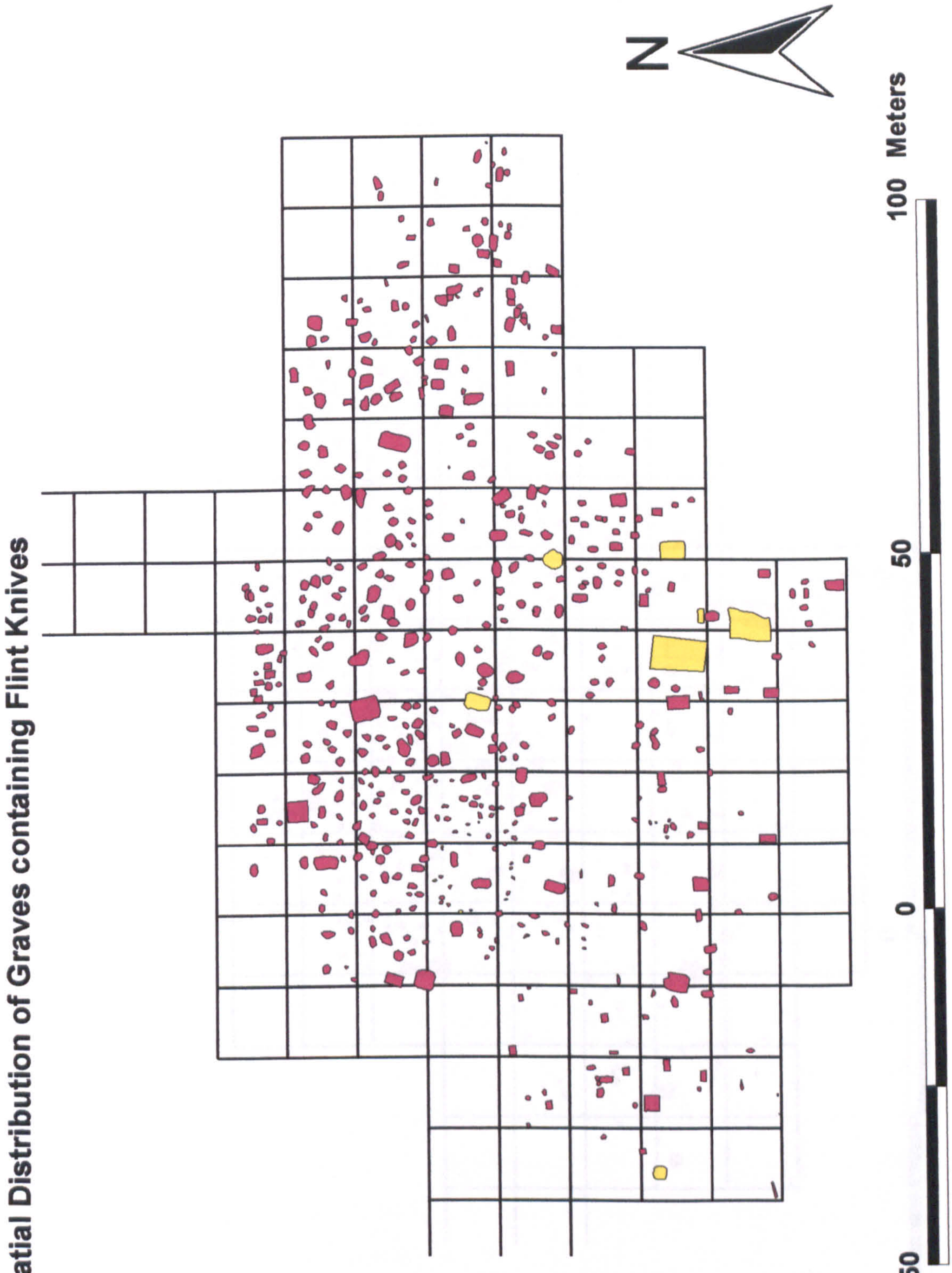


Figure 7.21: Graves with Flint Knives (highlighted in yellow)

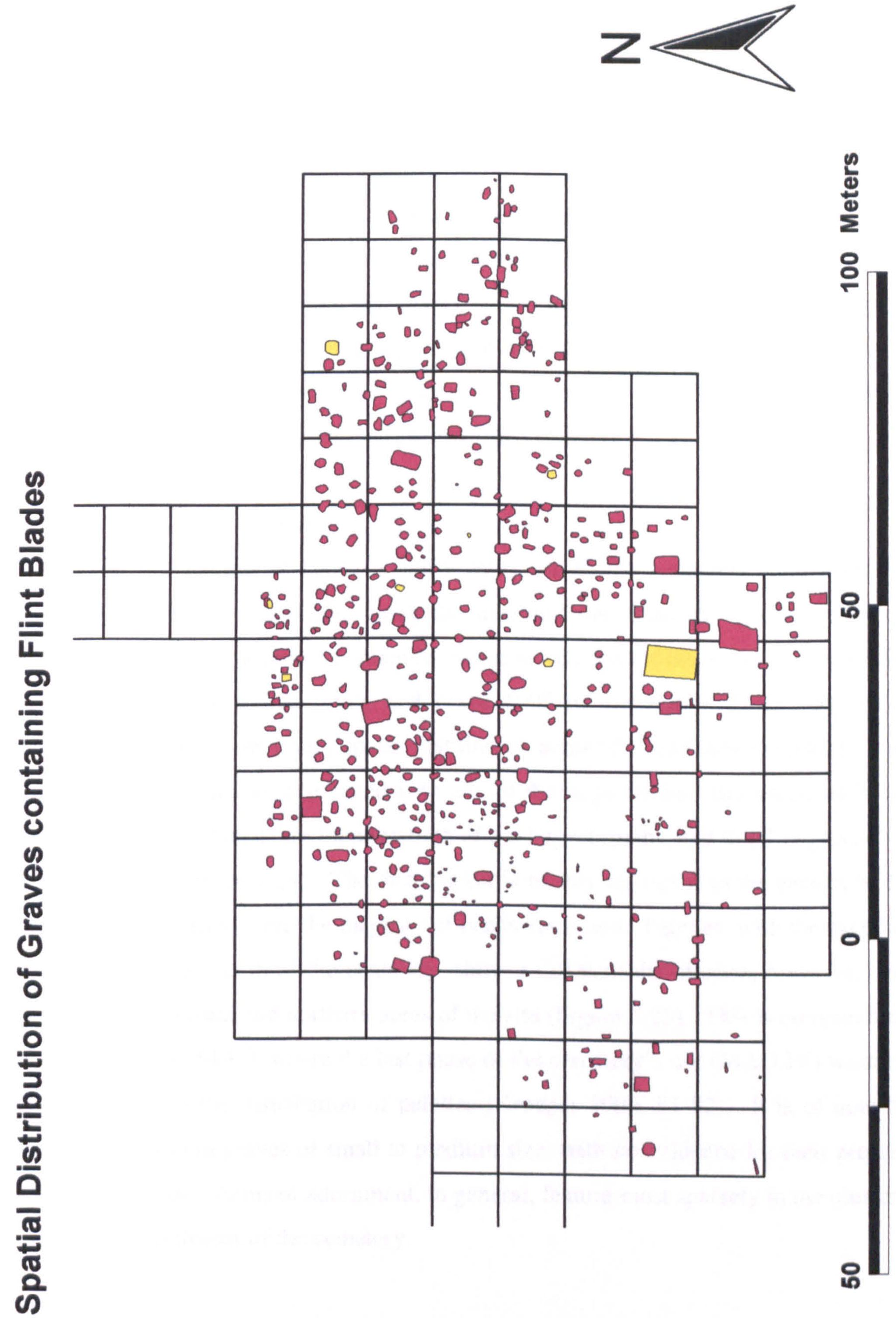


Figure 7.22: Graves with Flint Blades (highlighted in yellow)

Flint Knives and Blades

The majority of flint knives are found in larger graves in the central and southern area of the cemetery (Figure 7.21), although it is important to note that they do not necessarily occur with a large number of other artefact types. In the north of the cemetery, none of the tombs, large or small, contain flint knives. In the case of flint blades, however, there is quite a different distribution, with the north being as well represented as the rest of the cemetery, and with the exception of the large tomb 913 in the very south of the site, these blades are distributed throughout reasonably small graves (Figure 7.22). This fact might be suggestive of these blades being deposited in connection with the functional role of the individual, rather than as a show of wealth. It is considered that flint knives, however, may have been utilised as part of the funerary ritual (Section 6.2.3).

Items Associated with Adornment

The spatial distribution of beads is fairly even across the cemetery, with noticeable clusters in the north and, again, along the diagonal line from the south to northeast (Figure 7.23). Very few graves contain in excess of one item of bead jewellery, including the two large tombs in the south, and grave 1008 in the north. Finds classified as pendants, however, show a very sparse distribution across the site; they are mainly found in smaller graves, and not associated with any of the large tombs. Bracelets, while also fairly sparsely distributed, are found in both of the largest tombs, and in other graves both large and small (Figure 7.24). The distribution is mainly restricted to the eastern half of the site, which is also where the majority of beads are found. Palettes, with the exception of one grave in the south of the cemetery, show a different distribution, however, being confined to the central and northern areas of the site (Figure 7.25). This is comparable to the evidence from MAO, where the last phase of the cemetery's use (MAO IV) witnesses a swift decline in the distribution of palettes (Kroeper 1996, 81-82). It is of note that palettes are found in graves of small to medium size, with no evidence for their presence in the larger tombs. Items of adornment, in general, feature most sparsely in the cluster of graves in the northwest of the cemetery.

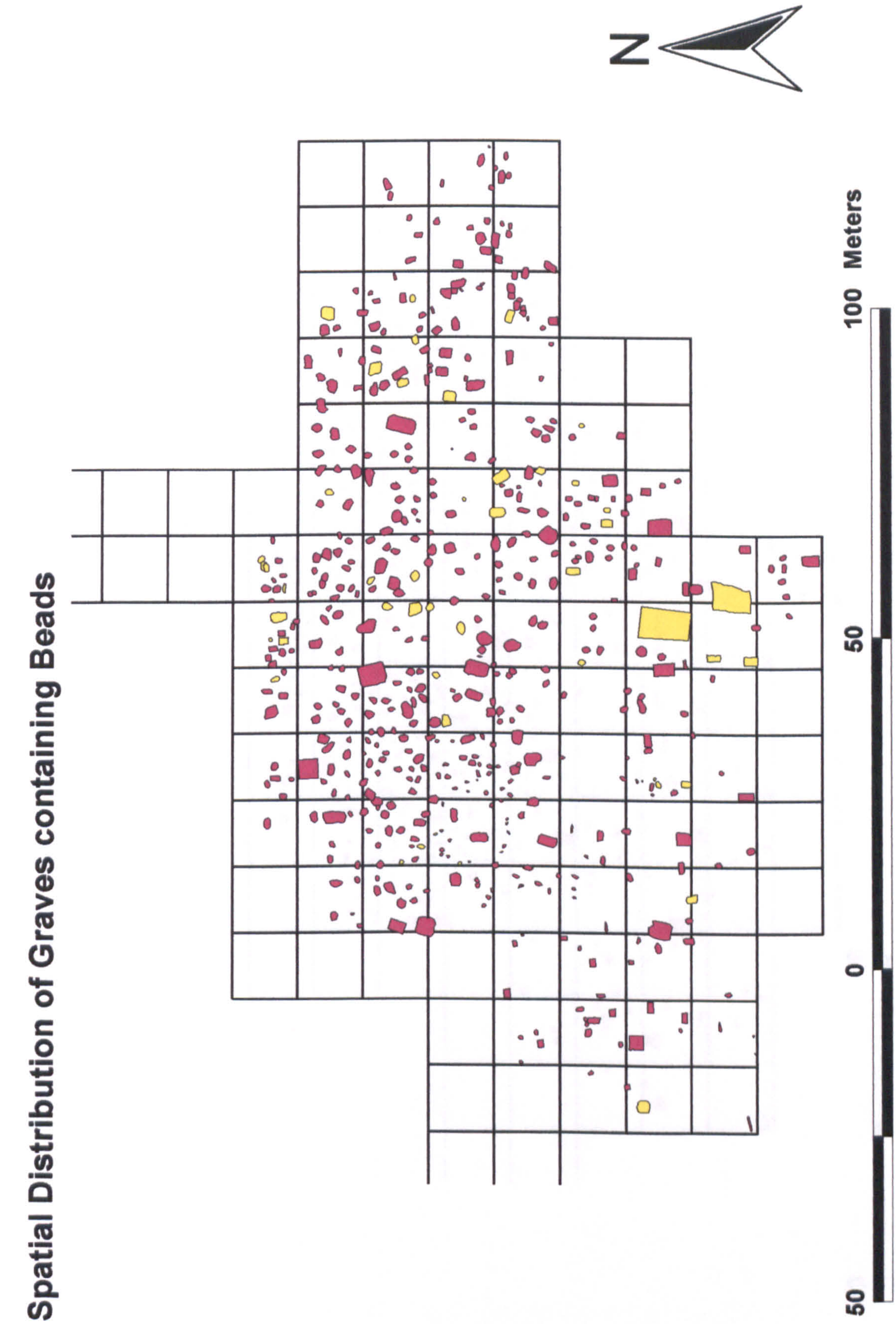


Figure 7.23: Graves with Beads (highlighted in yellow)

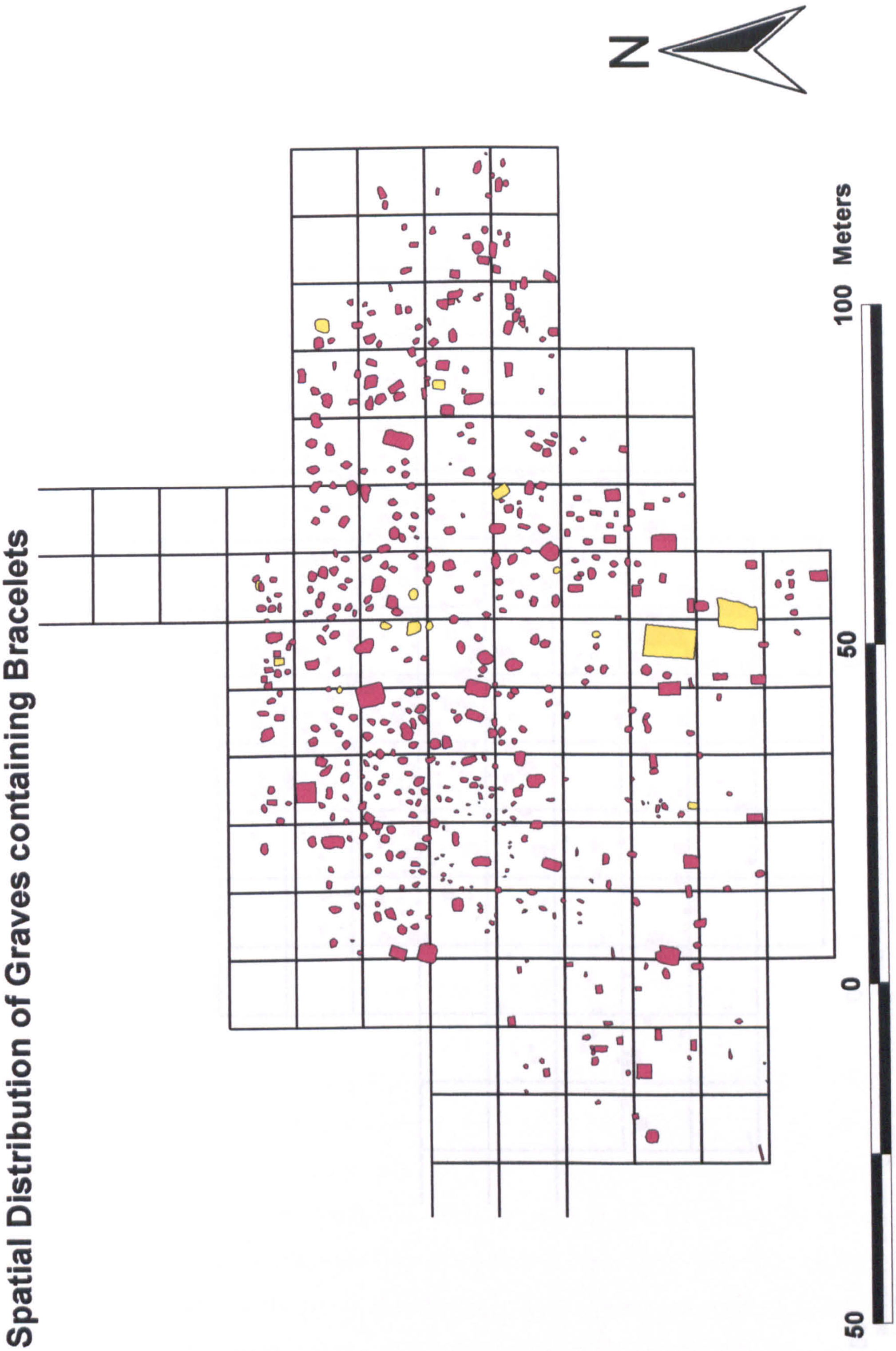


Figure 7.24: Graves with Bracelets (highlighted in yellow)

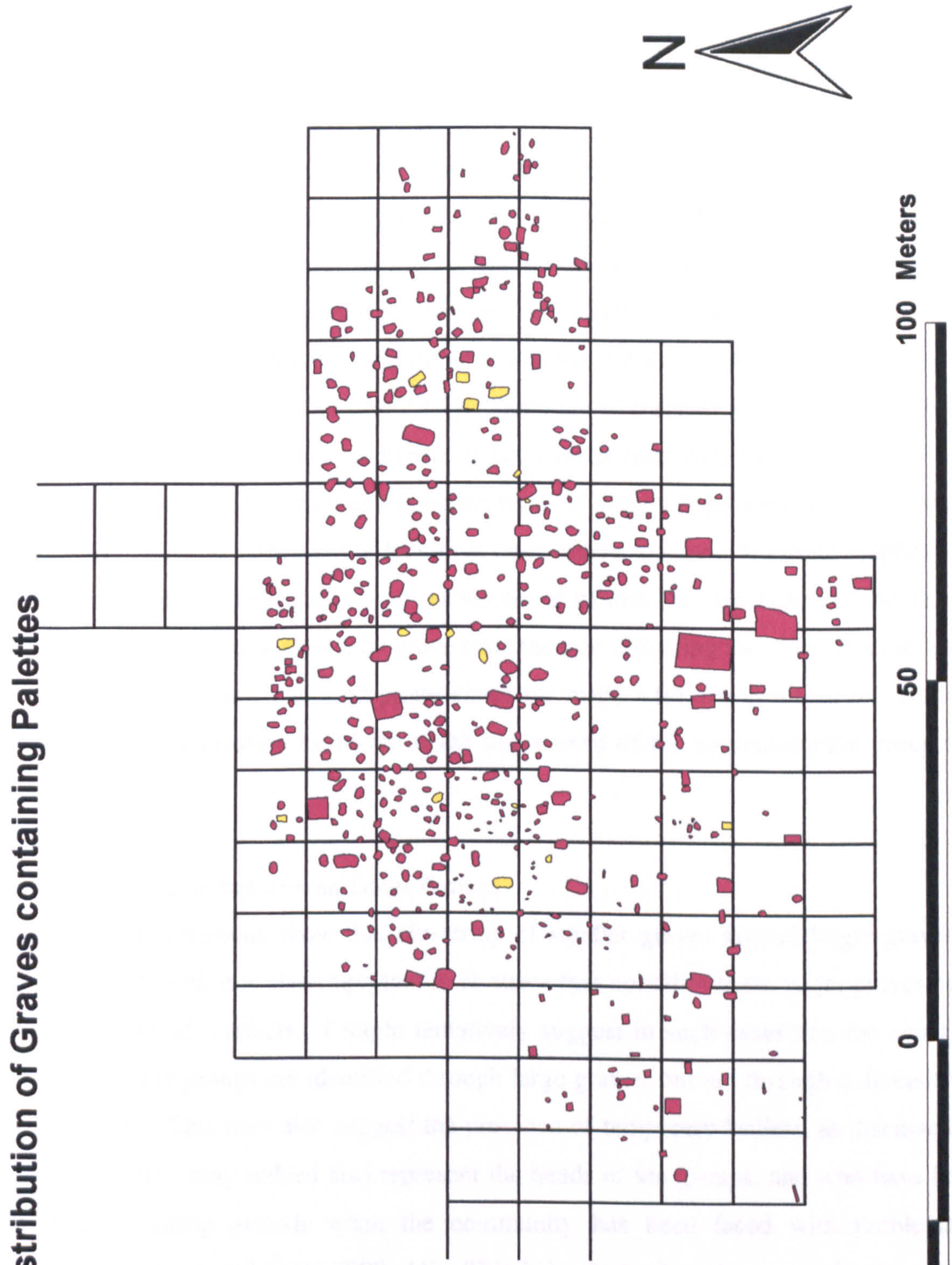


Figure 7.25: Graves with Palettes (highlighted in yellow)

7.1.2 Grave types and evidence for clustering around large graves

Grave Types

The highest frequency of grave type is the simple oval pit, and it is clear from the spatial distribution charts in Section 7.1.1 that these graves mainly cluster in the north of the cemetery, gradually becoming more sparse, although still persistent, in the central and southern areas. Rectangular graves are also distributed throughout the cemetery, however, there are more noticeable clusters in the northeast, the north, and to the northeast of the two largest tombs (see Figure 7.1). Worthy of note is that the largest oval grave is situated in the extreme north of the site (grave 1008), which represents one of the earliest graves at KHD (see Section 7.1.1). There are also sizeable rectangular graves in the north, though not the extreme north. It has already been noted in Section 7.1.1 that these graves contain a low number of artefact types, if a fairly high number of total goods, which might suggest either a) the lack of a competitive dynamic requiring emphasis of position through privileged access to resources, or b) that the importance of the family head or group leader was shown by grave size; the size reflecting the effort that members of the community have felt appropriate either for respect for the deceased (cf. Binford 1971), or as an indication to others of the importance of the community/kin group (cf. Goldstein 1981, 57).

Evidence for Clustering around Large Graves

The spatial distributions show that clustering of smaller graves around larger graves is evident, and I think it is also important to re-stress that not all of these larger graves have a high number of artefacts. I might tentatively suggest in such cases that the heads of initial settler kin groups are identified through large graves, but not through a diversity of artefact types. This may also suggest the presence of temporary leaders, as discussed in Section 3.2, who may indeed also represent the heads of kin groups, and who have been key figures during periods when the community has been faced with problematic situations (Johnson and Earle 2000, 44). This helps to explain not only why the graves are larger, but also why the contents do not allude to any form of privileged access to resources. The individuals doing the burying would have been able to express their relationship with the deceased by constructing a larger grave, whereas they might not have had the resources to furnish it with anything other than locally-produced wares. The

large tombs in the south, however, clearly suggest privileged access to a wide variety of types, and the graves that cluster around them contain a lower number of types, albeit in excess of those graves in the north of the site.

While it is clear that we do not have a segregated burial area for elite tombs at KHD, the spatial distribution plans do show, especially in the case of graves 970 and 913 (the largest two tombs in the cemetery), that there is reasonably sparse distribution of other graves in their immediate vicinity (see Section 5.2.1). There are a number of other graves around these tombs but the density of distribution is nowhere near so tight as in the north of the site, or even in the area directly to the northeast of the large tombs. This may be a method of showing status; not only through size, a high quantity and variety of grave goods, but also by affording the tomb spatial distinction. The individuals who occupied these two larger tombs (or the individuals who buried them) may not have been desirous of stressing links with ancestors for three key reasons that I will briefly discuss here.

Firstly, there was sufficient 'wealth' available to construct and sumptuously furnish these tombs, by which means both the deceased's and the community's importance could be made visible for those living at KHD, and those living in neighbouring communities. Secondly, increasing contacts with centralised organisation within Egypt came to be of growing importance, and this effectively eclipsed the significance attached to the original 'founder' kin groups at KHD (cf. Service 1962, 163-164; Parker Pearson 1999, 85). Thirdly, the individuals buried within these two large tombs may not have been born and bred within the KHD community, and thus had no true links with the ancestors.

It is also notable in view of the third point, that the only grave at KHD that we know to have been robbed is one of these two large tombs (970). It is further revealing that grave 1041, which postdates the two large tombs, is placed in the north of the site, possibly because by the end of the site's history the most tangible means of legitimisation was through association with ancestors (Service 1962, 106; Saxe 1970; Parker Pearson 1999, 83, 141, 193). I would also suggest that the individual buried in grave 1041 *was* an original member of the KHD community. This grave is further discussed in Section 7.1.3.

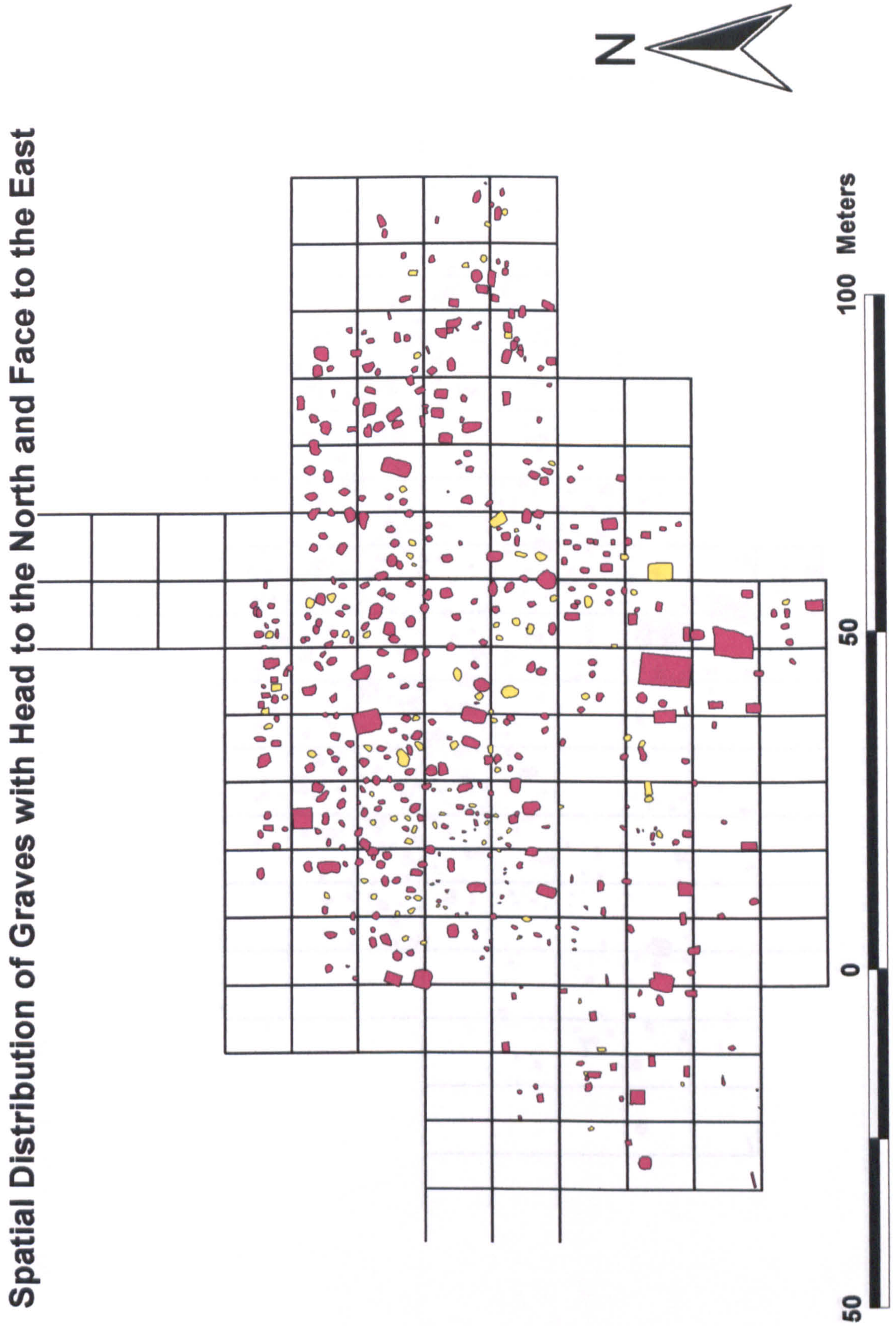


Figure 7.26: Graves with Burial Orientation of Head to the North and Face to the East (highlighted in yellow)

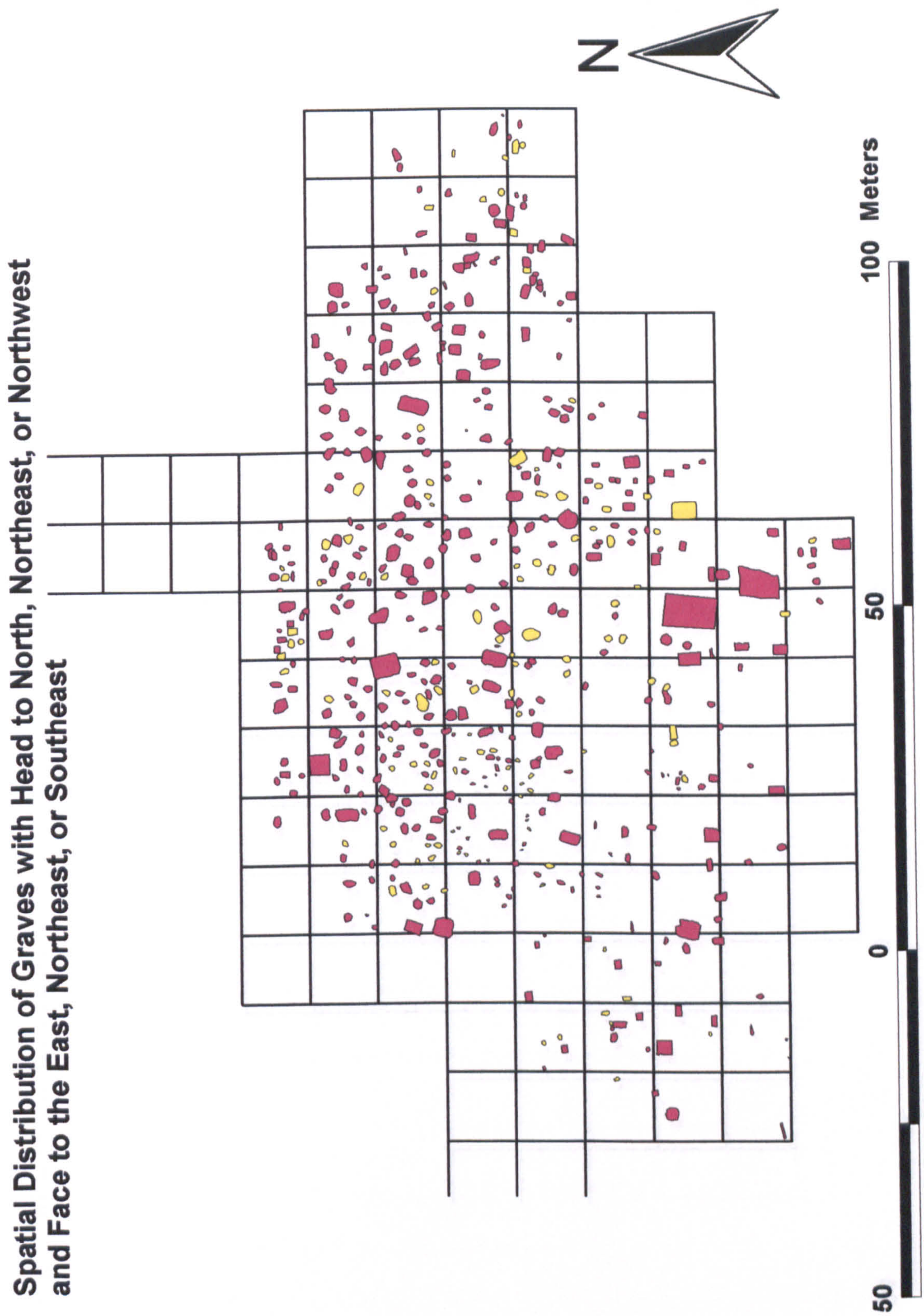


Figure 7.27: Graves with Burial Orientation of Head to the North, Northeast, or Northwest and Face to the East, Northeast, or Southeast (highlighted in yellow)

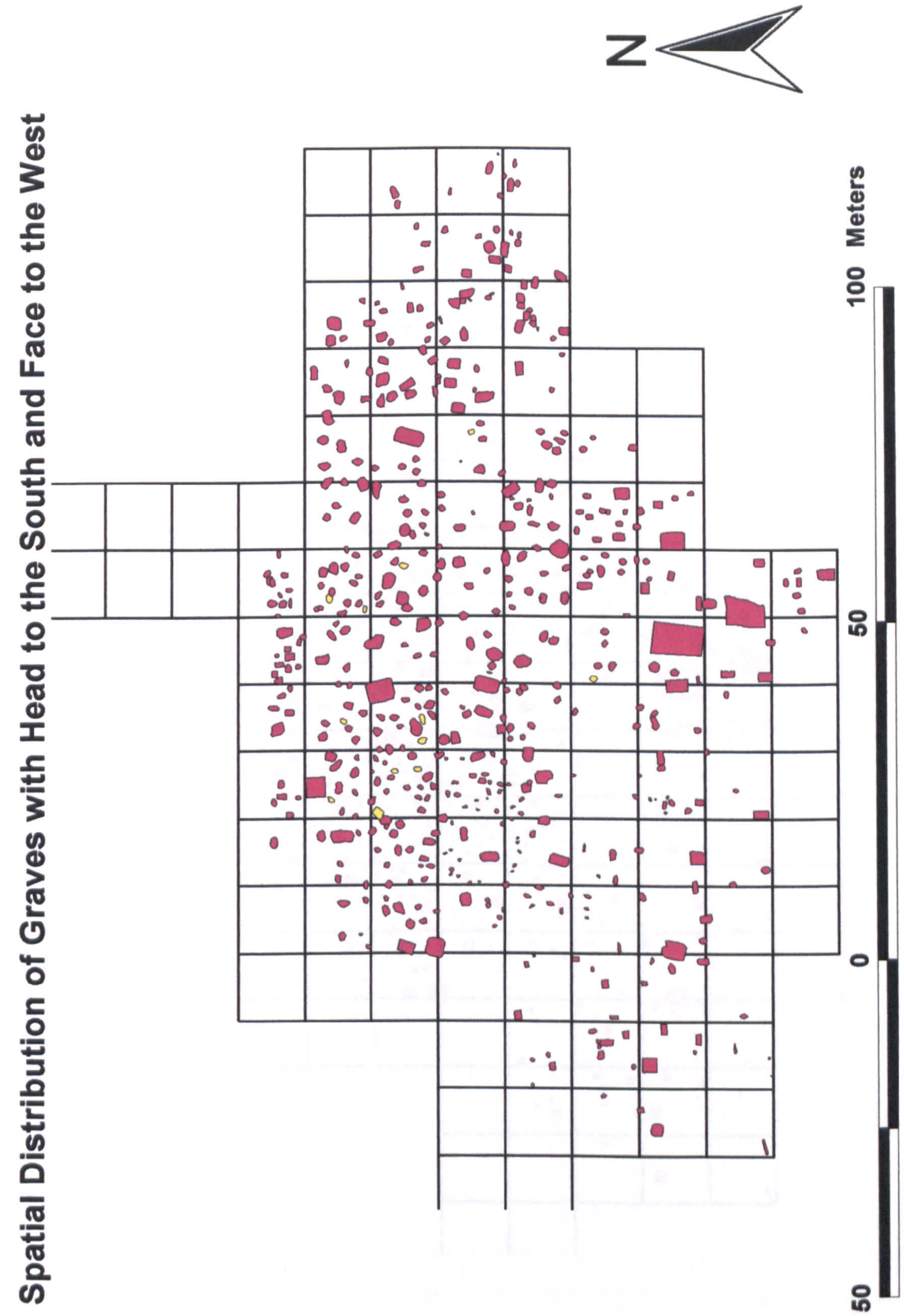


Figure 7.28: Graves with Burial Orientation of Head to the South and Face to the West (highlighted in yellow)

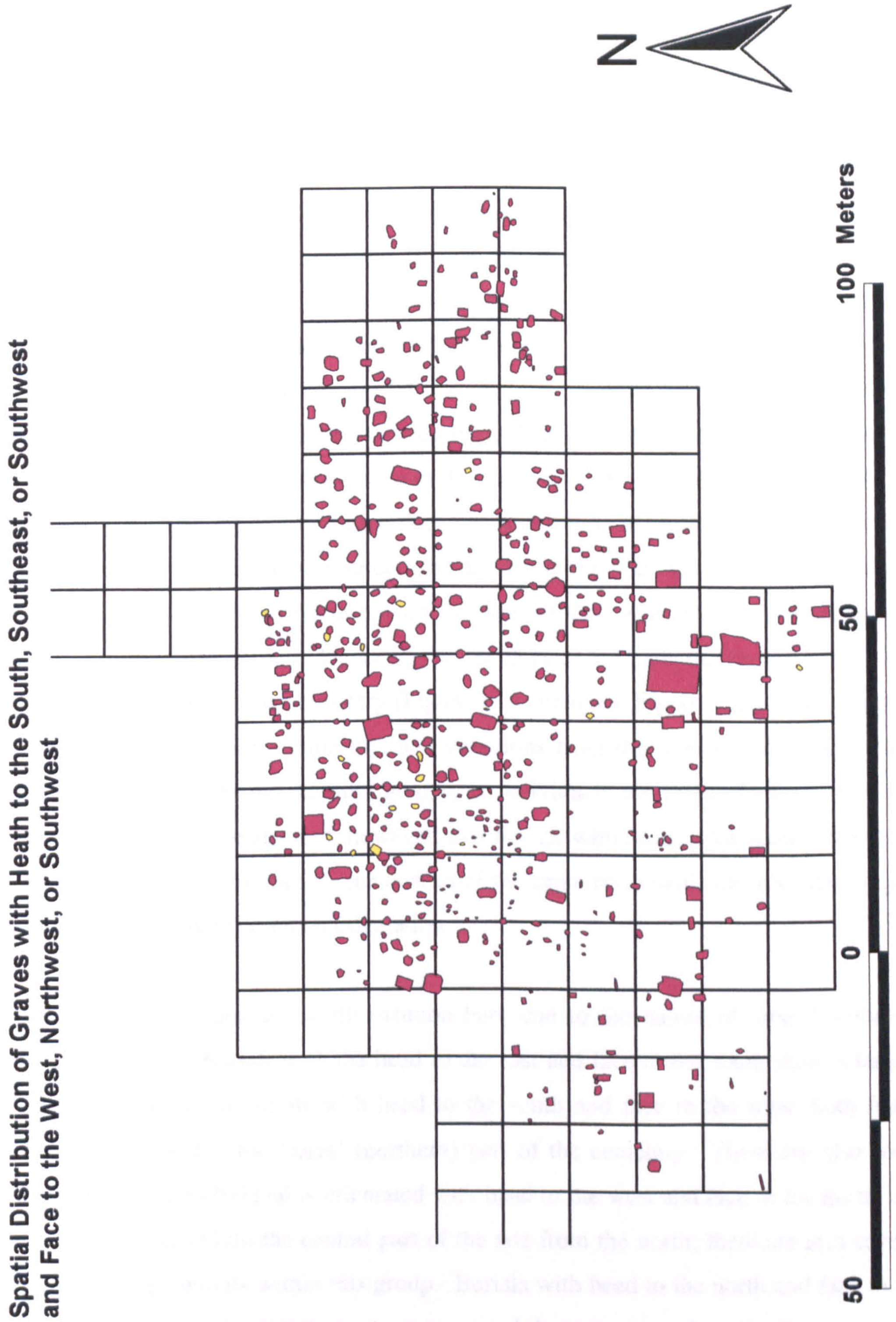


Figure 7.29: Graves with Burial Orientation of Head to the South, Southeast, or Southwest and Face to the West, Northwest, or Southwest (highlighted in yellow)

7.1.3 Spatial distribution as an indicator of ideological change

Carr's (1995, 190) research shows that there is a very strong association between the orientation of the body and philosophical-religious factors, which encompass ideological beliefs of the afterlife. The spatial distributions of different orientations at KHD offer scope for a number of lines of enquiry. From Sections 5.3.1 and 6.2.3, it is clear that the most common burial orientation at KHD, and indeed in Lower Egypt during this period is with the head to the north and the face to the east (Figure 7.26). This is clearly demonstrated through the spatial distribution of the burials with this orientation at KHD, which extend from the far north right across the site. I have included a distribution of graves (Figure 7.27) with variations of 45 degrees either side of the head north and face to the east orientation, because it might be useful to bear in mind that the position of the sun might be affected according to the time of day and year at which the burial was made (cf. Saxe 1971, 49-50). This distribution does not reveal any additional clusters, and rather strengthens the density of the strict head to the north and face to the east pattern. However, the distribution of graves with the head to the south and the face to the west (the most common position in Upper Egypt, see Section 5.3.1), is largely restricted to the northern central area of the cemetery (Figure 7.28; variants: Figure 7.29). This suggests an increasing ideological uniformity, and variations from the most common orientation may well represent distinct familial groups, or individuals not originally from the KHD community. It must be stressed, however, that burials with head to the south, face to the west, though mainly confined to one quarter of the cemetery, remain closely intermingled with those of the more common orientation.

Four other orientations are worth mention here due to the nature of their distribution and/or frequency. Burials with the head to the east and face to the south share a largely similar distribution to burials with head to the south and face to the west, both found predominantly within the 'early' (northern) part of the cemetery. There are also some burials where the individual is orientated with head to the west and face to the north, and these graves extend into the central part of the site from the north; there are also several reasonably large burials within this group. Burials with head to the north and face to the west are also present in slightly larger graves, and these are more broadly dispersed from the north through the centre and to the east and southeast of the cemetery. Notably, this

burial orientation was very common during the earliest phase of the MAO cemetery, which might have interesting consequences for this group of burials. Finally, burials with head to the south and face to the east are not frequent in the northernmost part of the cemetery, rather clustering in the east, with a few more dispersed graves across the rest of the site.

A pattern of increasing ideological cohesion, as reflected by orientation, also emerges through the spatial development of the cemetery, with the largest group deviating from the most common orientation being mainly concentrated in the 'earliest' part of the cemetery (head south and face to west), suggesting earlier kin groups holding with their distinctive ideology; this may also be the case with the possibly early group of burials with head to the east and face to the south. I would suggest that the kin group(s) whose ideological beliefs are reflected in the burial orientation of head to the north and face to the rising sun have been at the site since it was founded. This must remain as speculation for the present, since the northernmost extent of the cemetery is still subject to further investigation.

Unquestionably, nearly all of the graves are orientated north-south, and even the group of possible later burials with head to the south (predominantly in the east of the site) lie so as to face the rising sun, if adhering partially to the possibly earlier position of head to the south. The group with head to the north and face west, however, is sparsely distributed across the site, and it might be of importance that this distribution is not limited to very small graves. These groups with differing positions may well reflect distinct kin groups, or the arrival of newcomers with their own ideological traditions (see Section 4.2.3). On this note, it is also worth bearing in mind Hoffman's (1980a, 110; Section 5.3.1) comments that a further explanation for variable orientations might be the presence of 'outsiders or outcasts' within the cemetery.

With these distributions in mind, it is interesting to look back to Carr's (1995, 171-173) discussion of the importance of philosophical-religious and social factors at varying times within the development of a community (Section 3.3). He noted that philosophical-religious beliefs may be most important in simple societies, and then again in paramount

chiefdoms (Carr 1995, 171-173). The evidence from the KHD cemetery suggests that the north of the site is generally poorer, with the exception of grave 1008, with dense clustering of predominantly small graves. It is within the north that most diversity is visible in terms of orientation, which I have already noted may reflect burial by members of different kin groups. Also, fewer graves in this area have a great diversity of artefact types. Taken together, these may reflect the lack of impetus for social position to be legitimised through the medium of burial, possibly suggesting a lack of competition within/between these groups. Thus there are two key differences between the north and the central/southern area of the site: 1) in the central/southern area we find less diversity in terms of orientation than in the north of the cemetery; and 2) the graves in the central/southern area generally contain a higher number of artefact types than in the north. This first point might reflect increasing ideological uniformity within the community, and an increasing lack of heterogeneity between kin groups. Taken in combination with the second point, it might also suggest growing influence from an external source, be it increasing contact with the centralised organisation rising within Egypt, or with other, external, powerful communities (cf. Service 1962, 163-164). Either of these possibilities might result in increasing access to materials, and both might also suggest the diminishing importance of kin groups (cf. Service 1962, 163-164; Parker Pearson 1999, 85).

In terms of Carr's (1995, 171-173) consideration that philosophical-religious beliefs might regain importance through the necessity of legitimisation through association with ancestors, then there is at least one grave (1041) that might fulfil this role (Hassan 2000a, 39; cf. Service 1962, 106; Saxe 1970; Parker Pearson 1999, 141, 193). This grave is found in the northern area of the site and has been dated on the ceramic assemblage to the reign of King Aha; it is the latest burial within the Terminal Predynastic-Early Dynastic cemetery (Hassan 2000a, 39). Grave 1041 is rectangular in shape and above average in size, but it only contains two artefact types, ceramic vessels and a broken copper adze (although staining at the bottom of the grave pit may indicate the remains of an additional copper item). It is highly tempting to suggest that the burial was deliberately made in the north, since it does not follow with the general trend of development towards the south, when in practical terms there is no shortage of space in the south. It is quite possible that

the family/associates of this individual felt unable to bury him or her in the south, due to the comparable vastness of tombs 913 and 970. Thus, Carr's (1995, 171-173) proposition might be an effective one; the evidence quite reasonably suggests that the deceased was buried in the earliest part of the site (in a tomb not dissimilar in size to grave 1008), as a means by which to legitimise the importance of this individual's role within the KHD community (cf. Service 1962, 106; Saxe 1970; Parker Pearson 1999, 141, 193).

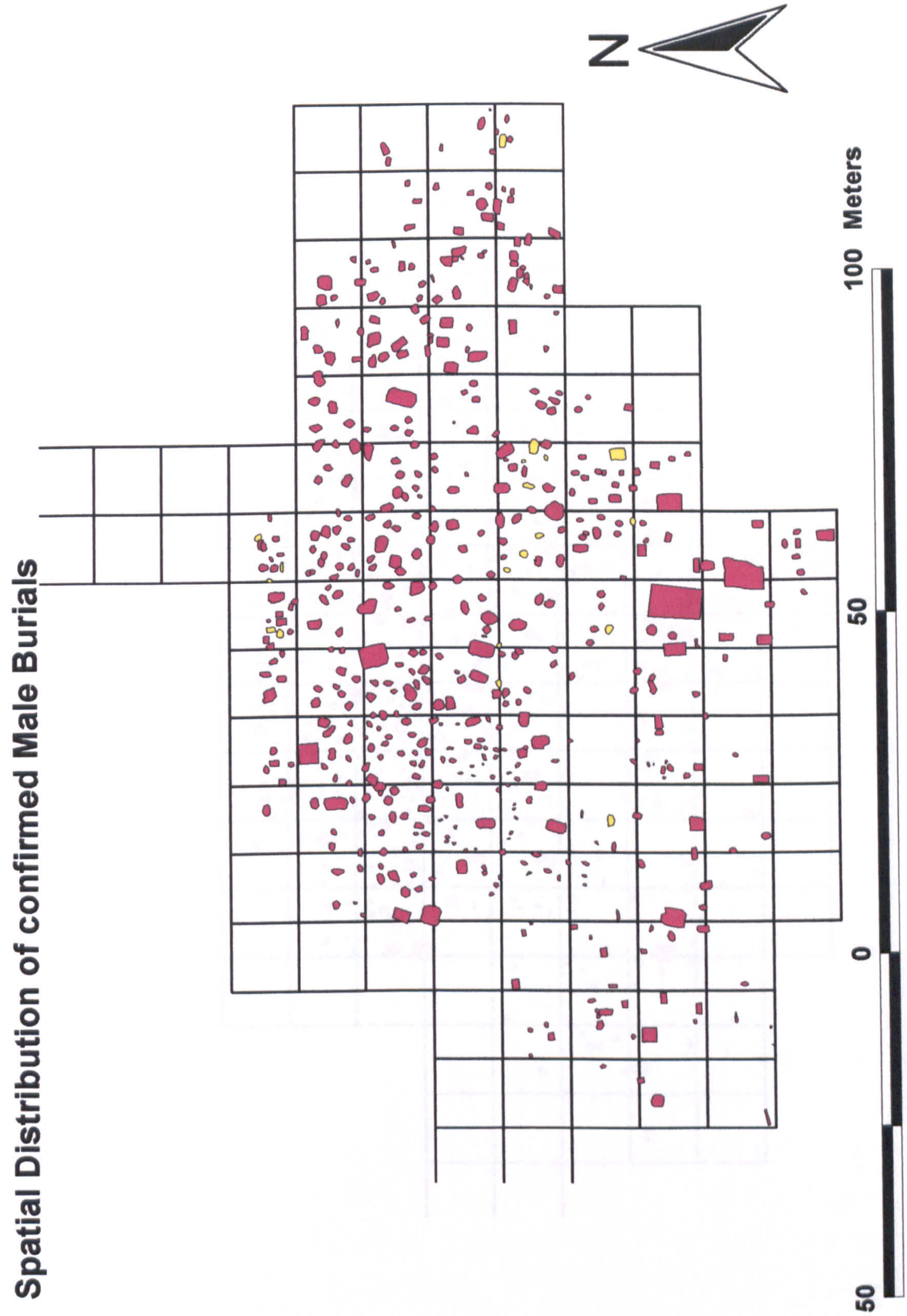


Figure 7.30: Male Burials (highlighted in yellow)

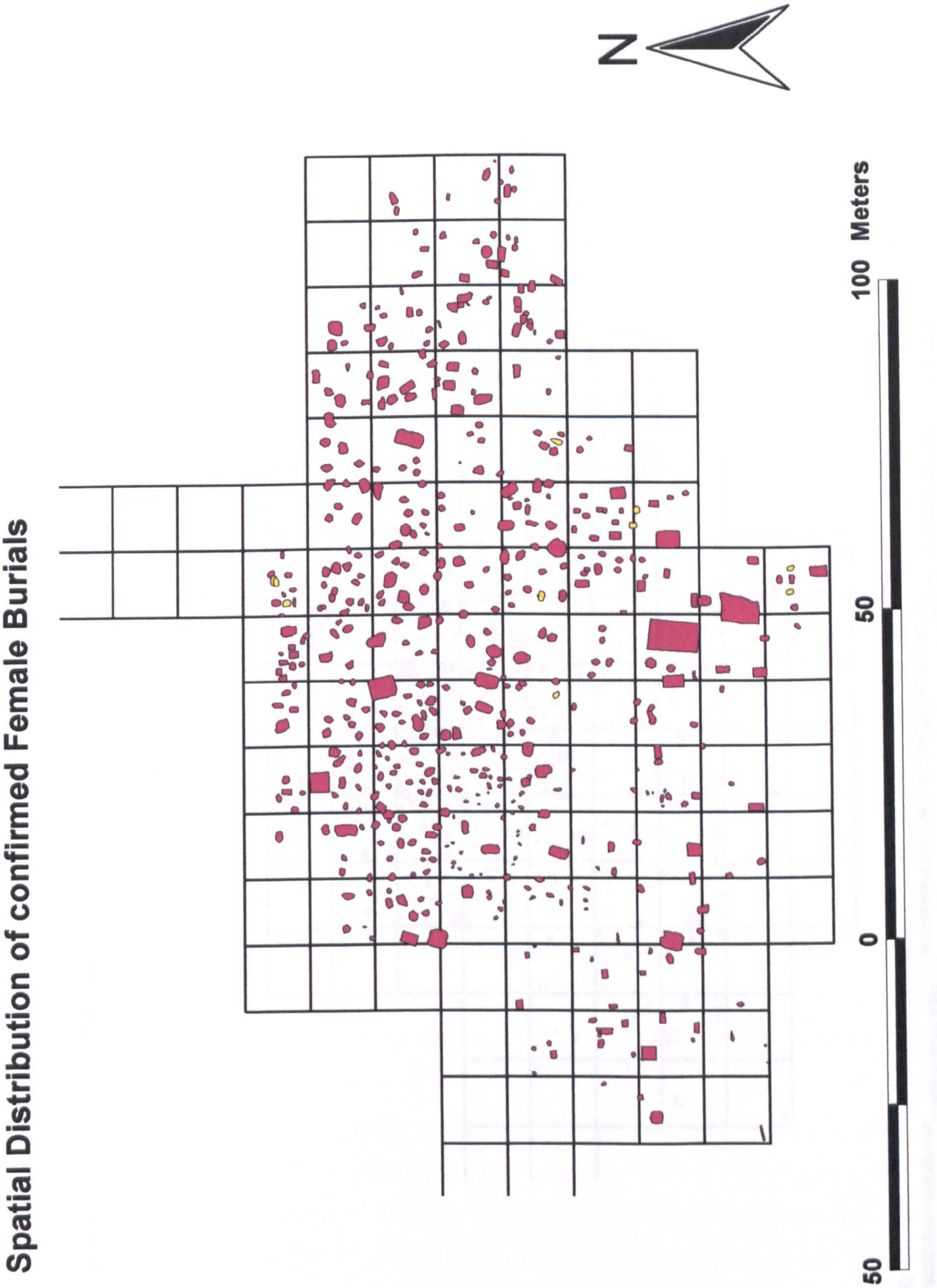


Figure 7.31: Female Burials (highlighted in yellow)

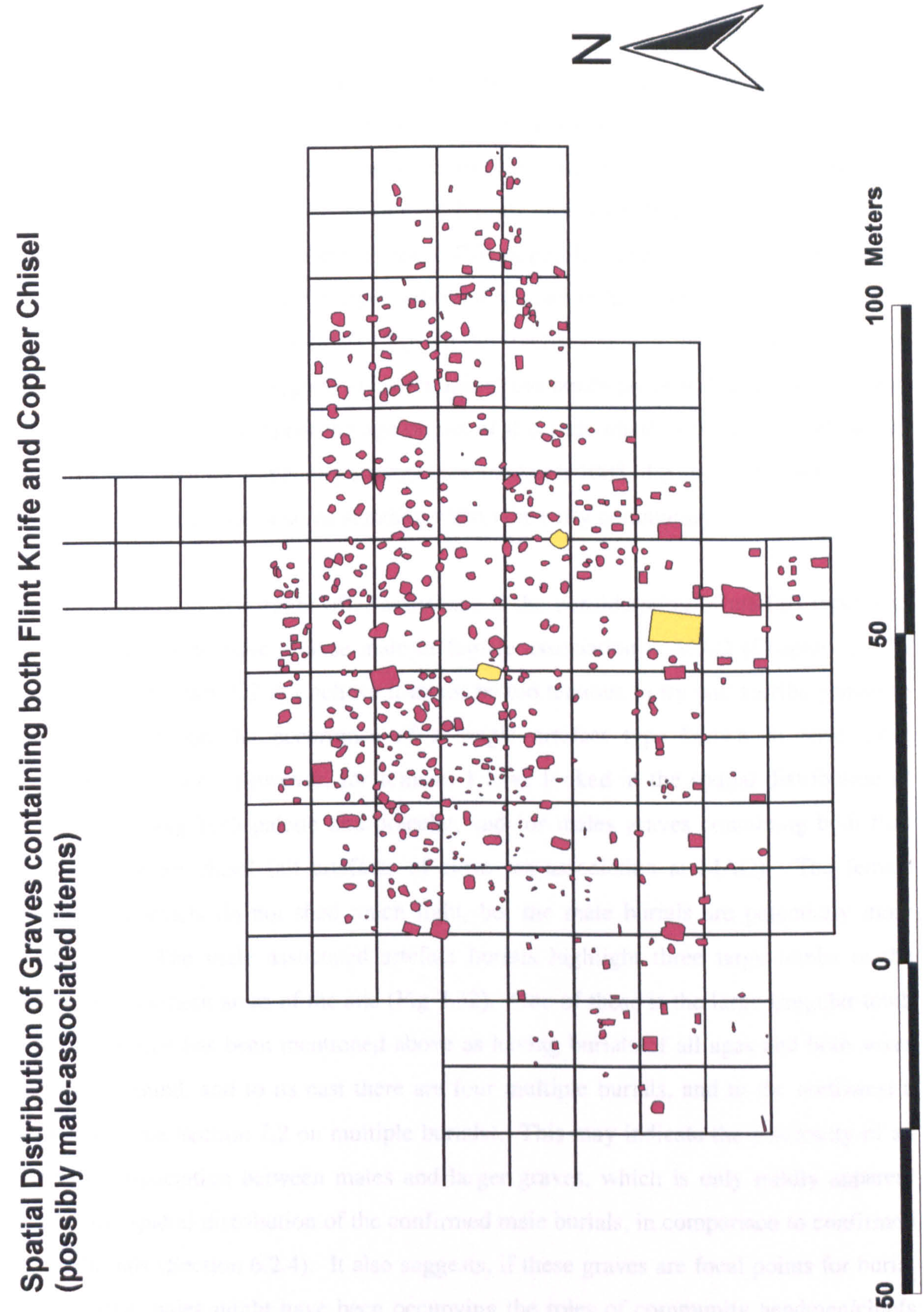


Figure 7.32: Graves with 'male-associated' goods (highlighted in yellow)

7.1.4 Spatial zoning across the cemetery

Although there are limited data regarding the sex and age of burials within the cemetery, those graves for which the data are provided have been plotted on the distribution maps. The spatial distribution of the graves that have been sexed shows both male and female burials in close proximity, both in the far north of the site, and in the central and southern areas (Figures 7.30-7.31). In terms of aged burials, it is also clear that individuals of all ages are buried within these same clusters. This might, however, suggest that kin groups are predominant in terms of the organisation of the site rather than zoning by age or sex (cf. Goldstein 1981, 56; Carr 1995, 156). In the southern area of the cemetery, there is a cluster around the large irregular shaped tomb to the northeast of 913 and 970, although unfortunately we do not know the age or sex of this individual. Likewise the cluster in the north may have been spatially arranged around tomb 1008, the grave size and contents suggesting an individual of some standing within the early community.

One final approach that might offer assistance is the consideration of artefact types that have been shown to have a close male or female association at MAO (Chapter 6). As mentioned in Section 6.2.2, I believe it might be too tenuous to try and ascribe gender to unsexed burials on the occurrence of a single artefact type known to have close associations by sex. However, for females I have looked at the spatial distribution of graves containing both palette and bracelet, and for males graves containing both flint knife and copper chisel (all artefacts of close sex-association at MAO). The female associated artefacts do not shed much light, but the male burials are potentially more informative. The male associated artefact burials highlight three large tombs in the central and southern areas of the site (Fig 7.32). One of these is the large irregular tomb in the south that has been mentioned above as having burials of all ages and both sexes clustering around, and to its east there are four multiple burials, and to the northwest a further one (see Section 7.2 on multiple burials). This may indicate the possibility of an increasing association between males and larger graves, which is only mildly apparent through the spatial distribution of the confirmed male burials, in comparison to confirmed female burials (Section 6.2.4). It also suggests, if these graves are focal points for burial clusters, that males might have been occupying the roles of community headmen/chiefs and co-ordinating relations with other regions. This is not to diminish in any way the

important roles that might have been held by women, and Hassan and Smith (2002, 63) suggest that certainly some sections of the female population were 'on equal footing with men' (cf. Savage 2000, 91). If this spatial test is attempted on single artefacts associated with either sex then quite different results are forthcoming, which illustrate the importance of trying to utilise as much information as possible. This is especially clear in the spatial distribution of bracelets, for example, since their sole presence would suggest both the large tombs as female, counter to the argument that grave 913 belonged to a male. Through establishing types with strong sex-association in the statistical analysis and implementing these inferential results spatially, it has been possible to further strengthen the increasingly close relationship between large graves and males, and also to consider the possibility of their key roles within the community vis-à-vis external contacts (cf. Service 1962, 163-164).

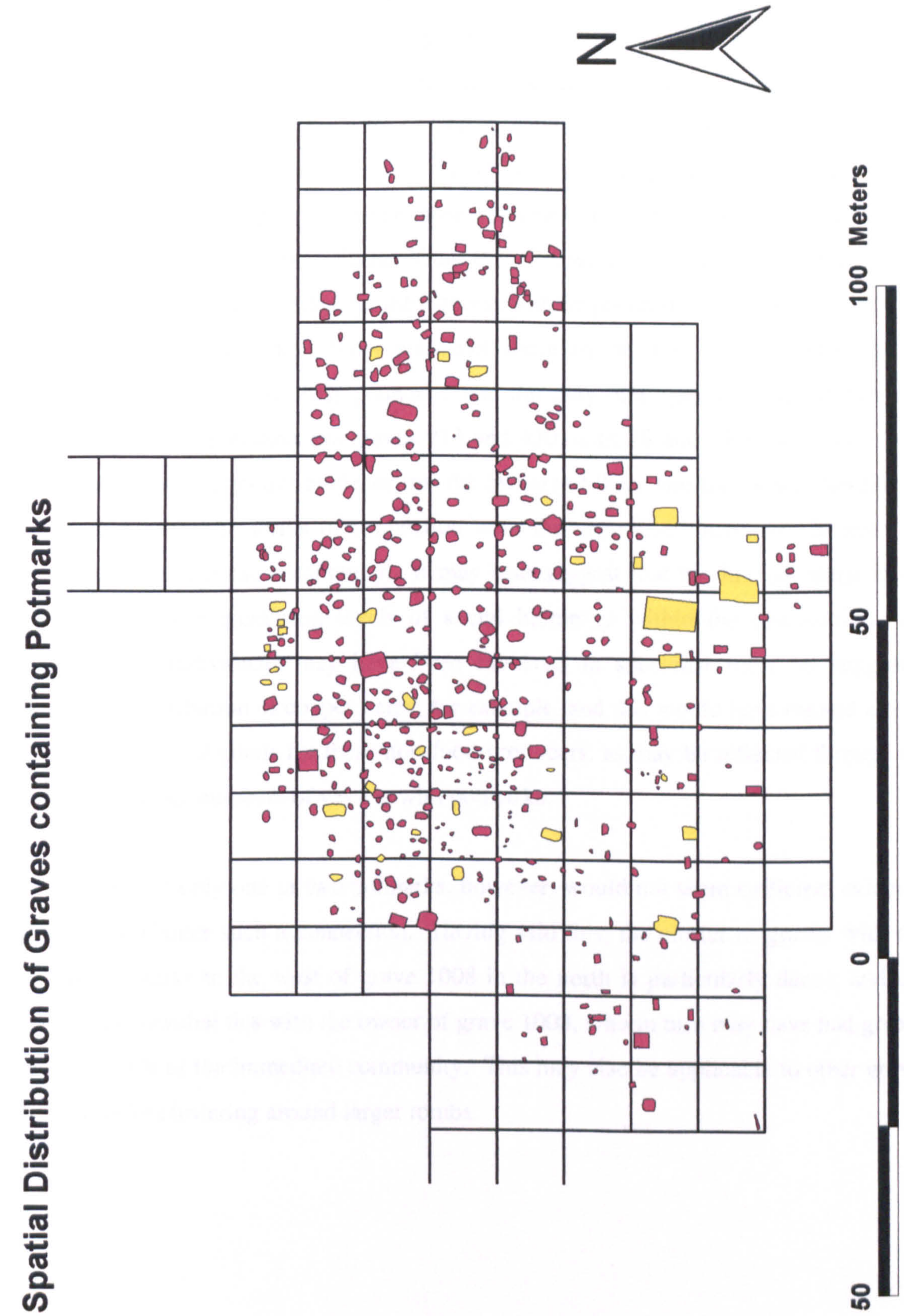


Figure 7.33: Graves with Potmarks (highlighted in yellow)

7.1.5 Spatial distribution of potmarks

The distribution of graves with single potmarks is interesting for a couple of reasons. There is a fairly high concentration of graves containing potmarks in the northwest area of the cemetery, where the majority of graves do not stand out in terms of size, high number of artefact types, or very high (17+) numbers of grave goods (Figure 7.33). While we might expect potmarks to be more frequent in the south/southeast sector, where more wealth is apparent, the evidence from the northwest of the site suggests a lack of association between large and/or wealthy graves and the presence of potmarks. There are only three graves that contain four+ potmarks, these are, notably, grave 1008 in the far north of the cemetery with four potmarks, and the only other graves with substantially higher numbers of potmarks are graves 913 and 970, with 28 and 19 respectively. It is reasonable to infer from this evidence that the owners of these two tombs may have had a special relationship in terms of connection with the centralised state, and in terms of redistribution within the community. It may also suggest that by this late stage in the history of the site increasing levels of social hierarchy within the community were present; more individuals may have been involved in specialist roles, as suggested through the distribution of copper items, for example, and this would have created a need for redistribution of goods for these non-food producers, as may be reflected through the evidence for large numbers of vessels with potmarks.

The presence of only one or two potmarks, however, would not seem sufficient evidence from which to infer such a connection. Having said this, the cluster of graves with one and two potmarks to the west of grave 1008 in the north is particularly dense, and this may suggest familial ties with the owner of grave 1008, who in turn may have had greater contact outside of the immediate community. This may also be applicable to other graves with potmarks clustering around larger tombs.

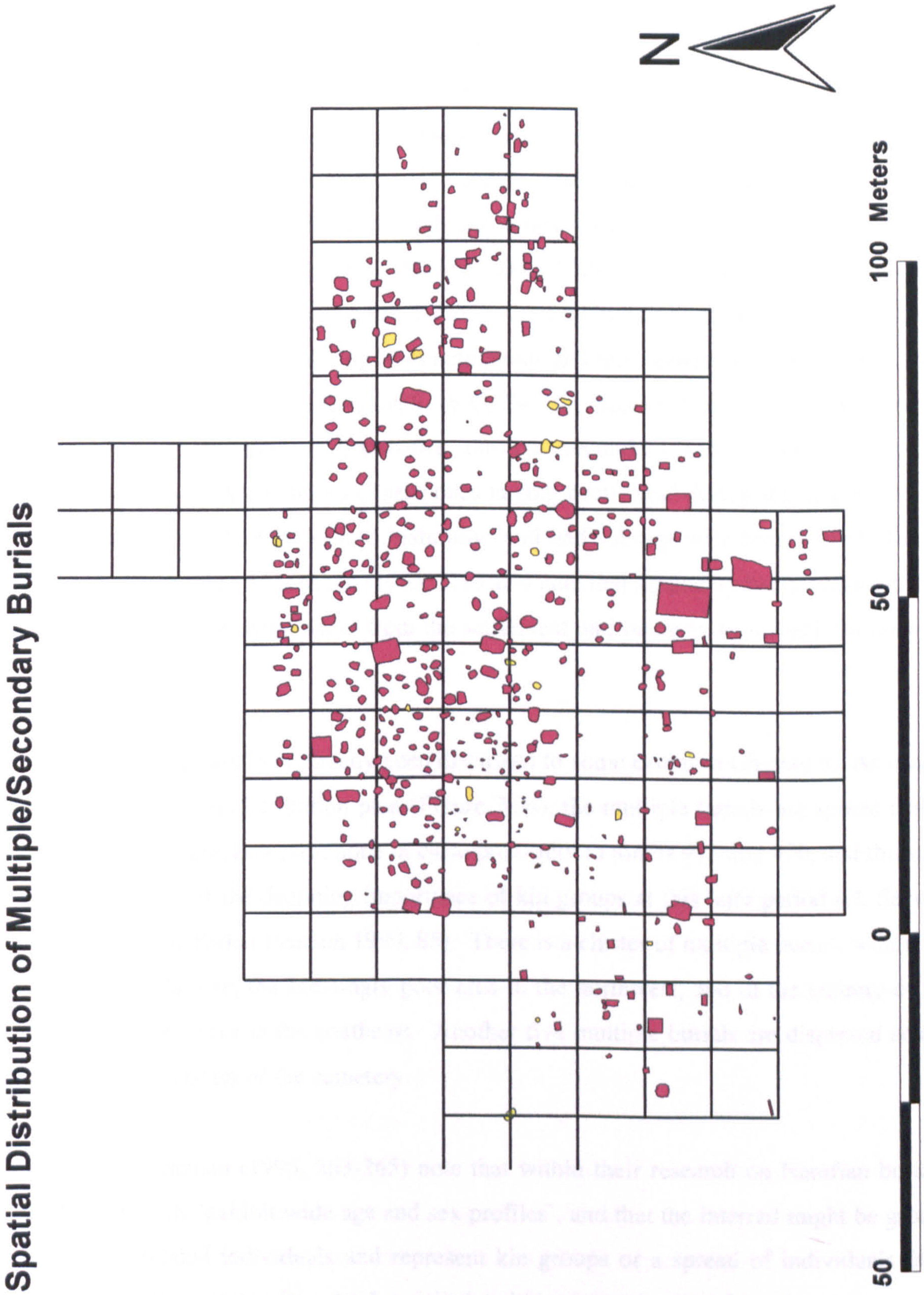


Figure 7.34: Multiple/Secondary Burials (highlighted in yellow)

7.2 Spatial distribution of multiple burials at KHD

Within the graves that are described as multiple burials, we find simultaneous, disarticulated, articulated and secondary burials (Section 5.3.3-5.3.4). It is important to note that disarticulated remains are found in both multiple and single inhumations. Among the multiple burials at KHD there are instances where all of the individuals are disarticulated, for example grave 1015, and in other cases it appears that the primary inhumation has been disturbed through secondary burial(s) in the same grave pit, for example grave 166 (Figure 7.38). Tucker (2003, 532), in discussion of both single and multiple disarticulated burials, notes that of 20% of all burials excavated from 1995-1999, 'several phalanges' were missing from both hands and feet, sometimes found higher up in the grave fill (cf. Petrie and Quibell 1896, 24, 25; Section 5.3.3). She considers an alternative explanation to disturbance through secondary burial, commenting that disarticulation might be due to either bones having been 'lost' during the original burial, or that the bodies had desiccated 'naturally' and had subsequently been buried (Tucker 2003, 532). Byrd and Monahan (1995, 279) also note that secondary burials may indicate that individuals are dying away from the settlement and being brought back for later re-burial.

The multiple burials have already been discussed to some extent in Chapter 6. As can be seen on the spatial distribution plan (Figure 7.34), the multiple burials are spread across the site. There are, however, none in close proximity to tombs 913 and 970, and this may point in favour of the declining importance of kin groups at this later period (cf. Service 1962, 163-164; Parker Pearson 1999, 85). There is a cluster of multiple burials within the far north of the site, the seemingly poor area in the northwest, and in the vicinity of the large irregular grave in the southeast. Another five multiple burials are dispersed across the southwest corner of the cemetery.

Byrd and Monahan (1995, 263-265) note that within their research on Natufian burials, multiple burials 'exhibit wide age and sex profiles', and that the interred might be groups of closely related individuals and represent kin groups or a spread of individuals from throughout the community who have died 'within a certain time frame' and have been sequentially buried within a multiple grave. As noted above, some of the burials suggest

disturbance either by later burials, or subsequent inhumations within the multiple graves, and the evidence might also suggest deliberate disarticulation prior to the body being interred within the tomb (Adams 1988, 47; Tucker 2003, 532; Section 5.3.3-5.3.4). The multiple and secondary burials in the KHD cemetery show wide variety in this respect, and in terms of both age and sex. It is fortunate that for the multiple/secondary burials there are age and sex data for 70% of the graves.

Several groups are represented in the multiple burials. There are mixed male, female, child burials, female only burials, mixed adult burials, female and child burials, and a number of burials where the age range is similar, but the sex unconfirmed. There are 17 double burials, one triple, one quadruple, and one burial identified as containing the remains of nine individuals. Burials that included confirmed children are restricted to the northern and northeast cluster, while the other multiple/secondary burials are only confirmed as containing adults. The northern cluster presents a very interesting picture. Grave 1001/1003 is a double, simultaneous burial of a young adult female and a child; grave 1015 contains the disarticulated remains of at least four individuals, young adult female, adult male, old adult and a child; and grave 1027 contains an adult male and female, and the mandible of a child, although this may belong to the disarticulated remains in grave 1015 (Tucker 2003, 532; Figure 7.37). Grave 1015 is stratigraphically later than 1027, and it may be that its construction caused the disturbance to both grave 1027, and to the single burial, 1028 (Tucker 2003, 532-533; Figure 7.37). The evidence from grave 166 (northwest cluster) where a minimum of nine individuals are interred, suggests sequential deposition. The records note that in this grave some individuals are found underneath others, some are disarticulated, whereas the flexed position is noted for others. It is possible, as discussed by Ucko (1969, 269; Section 5.3.4), that when subsequent interments are made, earlier burials may be disturbed so that the latest internee occupies a special position within the grave. Furthermore, Hoffman (1980a, 116) has used mass re-burial as an explanation for disarticulated multiple burials (Section 5.3.4). Grave 166 also contains a range of ages from child to mature adult, which heightens the possibility of the interred belonging to the same kin group, as discussed in Section 5.3.4 (cf. David 1992, 185 and 196; Byrd and Monahan 1995, 276).

The multiple/secondary burials display diversity in terms of orientation and provisions. The most common orientation at KHD (head north and face to the east) is not observed within this group of burials, in fact it is rather in the minority. None of the individuals in the northernmost area of the cemetery are orientated in this fashion, which is not surprising since this area of the site displays the most variation in terms of orientation for the single inhumations. There are a number of double burials where both bodies are orientated in the same direction, either side by side, or head to toe. A further variation is for the burials to either face each other, with heads in the same direction, or facing, but with heads at opposing ends of the grave pit (Figure 7.39). In two burials the skulls have been disturbed and have been placed upright (cf. Petrie and Quibell 1896, 24, 25; Crubezy 1998, 62-63). The age or sex of the deceased does not appear to have any bearing on the burial position, and neither does the area of the cemetery in which they are interred.

One possibility may be that the burials gravitate towards a large burial nearby. In the case of grave 1027 the direction of the heads is towards grave 1008, the two individuals in grave 602 in the northwest cluster may have their heads pointing in the direction of a large tomb directly to the north, and in grave 719 in the northeast, one of the individuals is oriented to the larger tomb directly to the east (cf. Reinold 1991, 27-28). This is by no means a uniform trait of multiple burials, however, since in the case of the deceased just to the west of the large tomb 913, both individuals are facing away from the large tomb. The spatially tightest cluster of multiple burials (in the southeast) does in fact reveal the most similarities in terms of orientation, with one of the interred in each burial positioned with their heads to the south and facing east; in two of these tombs the second burial is oriented with head to the north and face to the east, and head to the northwest and face to northeast. The largest multiple burial, grave 166, also displays a degree of internal dichotomy where the orientations could be ascertained, with 50% of the burials with head to the north, and 50% with head to the west (Figure 7.38).

Provisions found within the multiple/secondary burials also show much variation, with seven of the graves (in a variety of areas) containing no grave goods at all. Only two graves contain Egyptian alabaster vessels, and these graves are immediately next to each

other in the southeast cluster, an area in which finds of Egyptian alabaster are quite dense amongst single burials (Figures 7.12-14). Items related to adornment are found in a seven graves, which is quite a high proportion, and it is notable also that these items are only ever related to one of the interred. This is made even more interesting by the observations of Byrd and Monahan (1995, 273), who note that in the Natufian cemeteries they have examined, it is often the case that in multiple burials only one individual is adorned. They further remark that items of personal adornment may indicate that the individual concerned is holding a particular role within society; they note that grave good distribution 'appears to cross-cut kin lines' (Byrd and Monahan 1995, 277). It is noteworthy, therefore, that in one of the multiple burials at KHD a very rare grave good, a copper mirror, has been found under the head of one of the individuals, in a grave to the far west of the cemetery (Figure 6.67). In addition, two other graves warrant special mention here, both of which are situated in the far north of the cemetery. One, grave (1001/1003) contains copper wire fishhooks, a shell necklace and a sandstone pendant all in association with the child in a double burial with a female young adult. This grave has been discussed in Section 6.2.2 with regard to the possibility that the presence of such items might reflect the grief felt at the loss of a child (Mizoguchi 1992, 44; MacDonald 2001, 707). The other grave 1027, in addition to ceramic vessels, contains copper needles (possibly tattooing needles Hassan 2000a, 38; Hassan *et al* in press; Tassie in prep.), flint blades, and beads, all in association with a young adult female, buried together with an adult male; notably the female was interred first.

The multiple burials would appear to represent a diversity of kin groups, and other subgroups within the community, with a range of differential attitudes to bodily treatment, re-interment and secondary interments. It is interesting that children have only been found within multiple burials in the northern area of the cemetery, and this may represent ideological change across the site. It is feasible, as noted above, that some of the multiple burials have been positioned for their proximity to the grave of either a family head or local chief, although the spatial distribution indicates that this is possibly not always the case. It is possible that positioning in proximity to a family head or chief raised the standing of the family group within the community.

In terms of the multiple burials, the evidence from KHD shows similarity to that at other sites throughout Egypt during the Predynastic and Early Dynastic (Section 5.3.4). It is a point of interest that as noted in Section 5.3.4, although multiple/secondary burials generally decline in frequency from Naqada III onwards, KHD dates to this period and yet provides good evidence for the continuation of this practice.

7.3 Comment on spatial distribution at Minshat Abu Omar and Kufur Nigm

In terms of comparison with the spatial organisation of the other sites with which I am concerned, it is unfortunately not feasible for me to present the material here in the same format as it has not been possible to gain access to the site plans. However, there are a number of general observations that can, nonetheless, be made. At MAO very similar trends appear in the overall distribution of graves in terms of both size and density (Kroeper and Wildung 1994, plan 3; 2000, plan 7). The temporal spread of the MAO cemetery is from the south to the north, and the majority of the smallest graves are very densely clustered in the earliest part of the cemetery, with increasing sparsity and grave size into the later areas of usage (Figure 7.35). This is similar to the pattern at KHD, although at KHD the temporal spread is from north to south. It is notable that there is also a cluster at MAO to the east of the cemetery, which is unlike the earliest phase of the site because there are some larger graves here and the distribution is not so dense as in the south (cf. Ellis 1996, 160). There are large graves in various areas of the site, however, the latest phase of the site presents the least dense distribution, and it is here that we find the largest graves (the 'elite' graves) at MAO (Kroeper 1992, 127; Section 5.2.2). It is also notable that at MAO the 'elite' burials have increasing spatial freedom the further north (later) they are positioned.

A compilation of the distributions of different grave types at KN is shown in Figure 7.36. Spatial distribution plans (in the KN records) show the spread of different grave types across the site and I will discuss these briefly here. The jar burials are well distributed and occur in all but the northernmost part of the site. All child burials, with the exception of two coffins burials, are made in ceramic jars. The clustering of jar burials is most dense in the central and southern areas of the site. The pottery coffins show a similarly

dense distribution in the south of the site, with a far greater degree of sparseness to the north, there also appear to be three clusters in the southern area.

The mud-brick lined pits with pottery coffins show almost the same distribution as the pottery coffins; this is especially clearly seen in the three clusters in the far south of the cemetery. The mud-brick lined pits with extra storage areas (most also containing pottery coffins) show a similar pattern to the pottery coffins. However, the few graves of this type present are mainly encountered within the southern area of the cemetery, with a single grave in the far north. Mud-brick lined pits without remains of coffins show three main clusters; one of three graves in the far north of the site, a single grave in the central area of the cemetery, and then a cluster in the south.

It is clear from observing the spatial distribution that the densest concentration of graves occurs in the south of the cemetery. That the jar burials remain fairly constant in their distribution within the central area, however, may in some way be connected to the zoning of child burials. This remains a tentative suggestion, however, since the jar burials are closely intermingled with the other grave types in the far south. At both KHD and MAO denser clustering has been observed in the earlier areas of burial (north and KHD and south at MAO). At KHD the settlement is believed to have been located to the northeast of the cemetery, whilst at MAO it was to the southeast of the cemetery (Section 1.3). This indicates that the earliest burials were made closest to the settlement at both sites. It is also observable at KHD and MAO that the largest, most elaborately constructed tombs are associated with the later periods of burial, farthest from the initial settlement (Kroeper 1992; Hassan 2000a). The developmental direction at KN is unclear, although the greater density of mud-brick tombs in the south of the cemetery might favour a north-south development, in view of their occurrence in the late stages of the MAO cemetery (Figure 7.36). It is also possible, however, that this cemetery represents a spatially distinct burial area for the 'elite', in which case the greater density of mud-brick tombs in the south might, conversely, suggest a south to north development, with more spatial distinction in the latter stages of the cemetery's use.

7.4 Summary

Viewing the cemetery from a spatial perspective reveals social differentiation in terms of the provisioning of the graves and general changes in prosperity for the community (cf. O'Shea 1981, 45; Yoffee 1993, 71; Parker Pearson 1999, 85). As noted above, however, spatial analysis helps to determine not only the changes in prosperity, but also that a prosperous period for one group of the community does not imply prosperity for another. It seems clear that even the larger tombs in the northernmost area of the site do not show a strong association between tomb size and variety of types, which could be interpreted as follows: i) the northern area of the cemetery represents a fairly poor group of individuals, which could represent a period of low fortune for the KHD community; or ii) the area represents a kin group wherein the necessity, desire, or even ability to show position through the medium of the grave is not prevalent (cf. Goldstein 1981, 57; Parker Pearson 1999, 85).

The greatest spatial freedom, show of wealth and potential connections to the centralised organisation are detectable in the south of the cemetery. The two largest tombs, in particular, are prominent in terms of quantity and variety of vessels, high numbers of potmarks, and their position in a relatively sparsely clustered area. Spatial diversity between densely clustered small graves and more sparsely clustered larger graves shows similarities to the later phases of cemeteries of longer temporal usage in other parts of Egypt (Section 5.2.1 and 5.2.2). Through the spatial distribution analysis it becomes apparent that there is an increase in ideological cohesion if we explore the development of the cemetery from north to south. While the most common orientation persists across the cemetery, the variant orientations decrease spatially throughout the central and southern areas. If the variation in orientation reflects different kin groups, it is possible to suggest that increasing uniformity accompanies either their declining importance in favour of the centralised organisation, or, alternatively, that one descent line assumes increasing importance within the community. The conspicuous lack of multiple burials in the vicinity of the two large tombs in the south of the cemetery further supports the hypotheses that kin groups decline in importance with the increasing importance of centralised organisation. However, it is also important to remember that in view of the evidence we have for secondary burials, the re-opening of graves for additional

inhumation(s) may have been occurring in the rest of the site in a period contemporary with the large tombs. This possibility is increased by the fact that we know that grave 1041 postdates graves 970 and 913, and yet is situated in an area associated with early burials, very possibly for reasons of legitimisation.

Looking, however, to the spatial distribution of graves with higher numbers of artefact types, they are mostly clustered along the northeast to south diagonal line, which suggests privileged access to a wider range of artefacts, which might reflect the raised importance of certain kin groups in terms of external contacts. Looking at the spatial distribution charts it is feasible that there was some intentional clustering around these graves. This, in combination with the lack of association between higher numbers of types and small graves, might further support the argument that they are family heads, or individuals who have held important roles within certain kin groups. There is not, however, any sign of an 'elite' cemetery as is more common in Upper Egypt; rather the large tombs at KHD and MAO are in less densely clustered areas.

Spatial distribution at KHD is not very revealing in terms of gender, nonetheless the limited bioanthropological data, together with the potential for sex-associated grave goods from MAO has led me to infer the possibility of males increasingly occupying social roles involving communication with the centralised organisation, as expressed through the variety and quantity of grave goods and manpower for tomb construction (cf. Service 1962, 163-164; Section 6.2.4.).

The spatial analysis for KHD strongly suggests, in agreement with the statistical analysis, that there is evidence for a ranked society in the earlier history of the community, with seeming lack of emphasis on status through burial in terms of grave wealth in the north of the site. Looking at the spatial development of the site, however, there are zones that suggest groups and/or individuals with greater access to materials, and this together with the possible intentional clustering of other graves in their near vicinity suggests increasing inequality within the community. By the penultimate phase of the cemetery it is possible to detect signs of stratification in line with the increasing influence of the centralised state; although subsequently the evidence for burial once more in the earlier area of the

cemetery might suggest that relations between KHD and the centralised organisation were diminishing.

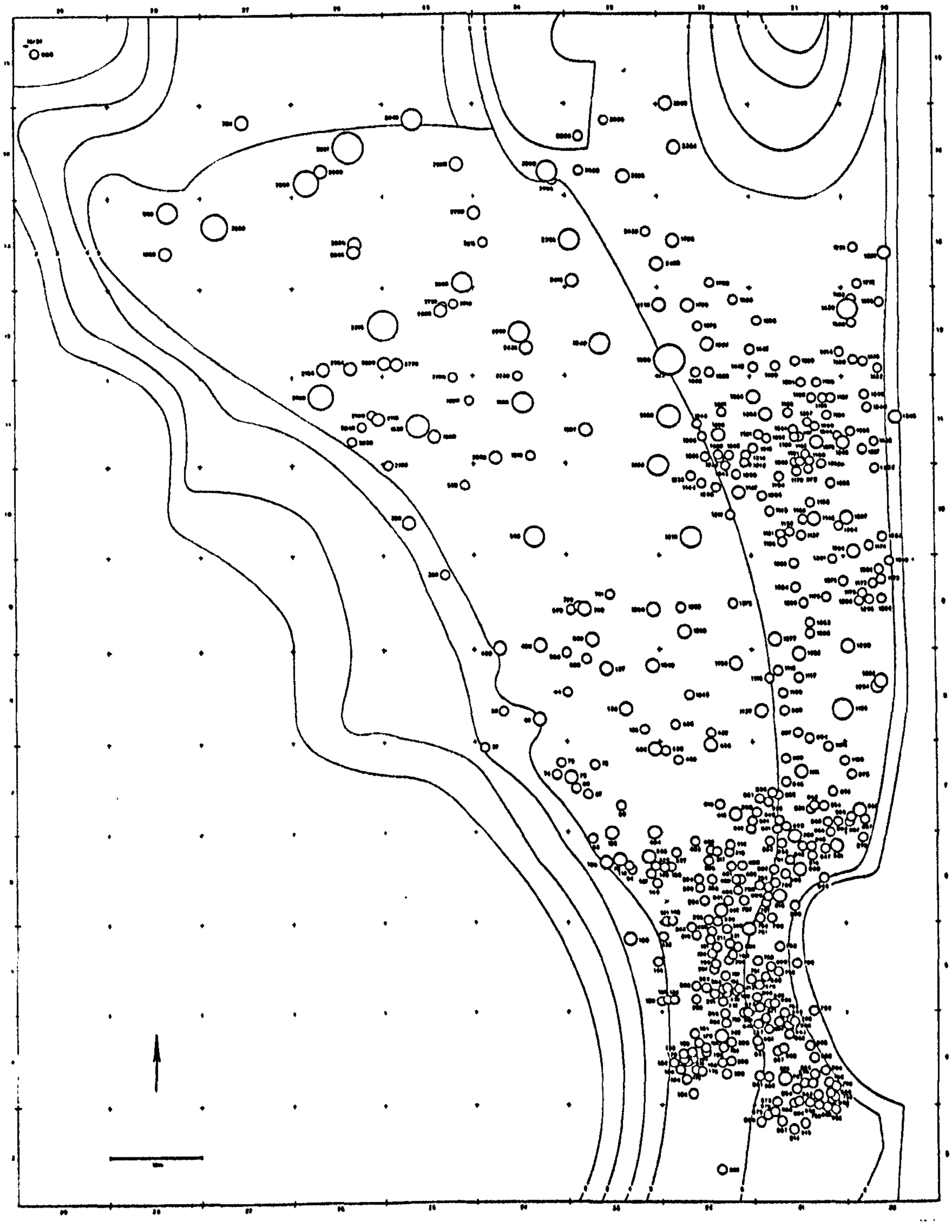


Figure 7.35: Distribution of the Predynastic and Early Dynastic Graves at MAO (Kroeper and Wildung 1994, plan 3)

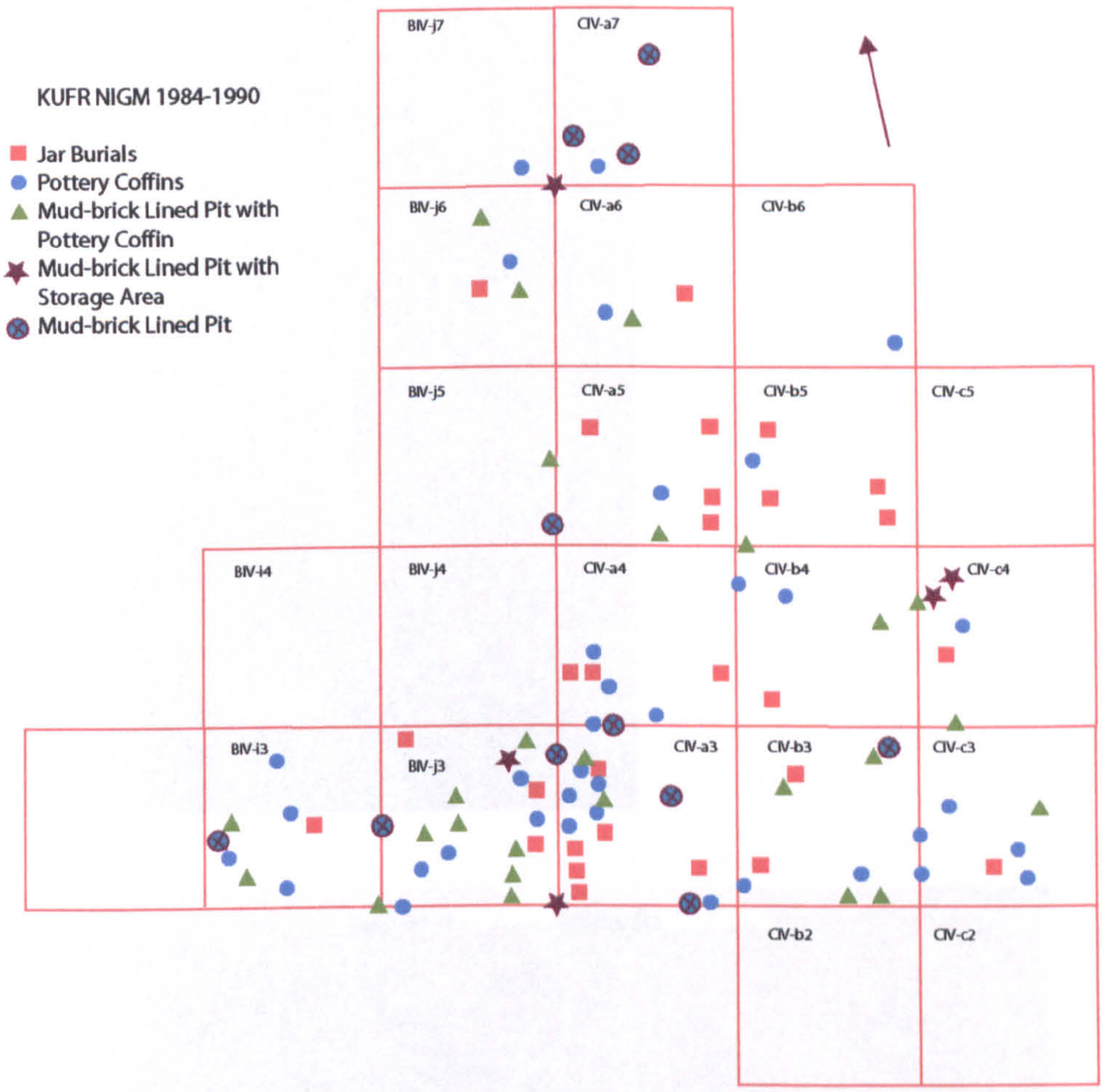


Figure 7.36: Distribution of Grave Types at KN (redrawn from excavation notes)

Image removed due to third party copyright

Image removed due to third party copyright

Figure 7.37: Multiple Burial 1015 at KHD (top), and Burials 1015 and 1027 (Photograph courtesy of Prof. F. A. Hassan)

Image removed due to third party copyright

Figure 7.38: Multiple Burial 166 at KHD (Photograph courtesy of Prof. F. A. Hassan)

Image removed due to third party copyright

Figure 7.39: Double Burial 842 at KHD (Photograph courtesy of Prof. F. A. Hassan)

8 General Conclusions

In this final chapter I review the key results of the data analysis, and discuss how these results relate to the bigger picture. My discussion comprises five main sections, each gradually broadening in focus. The first section considers the implications of the intra- and inter-site observations from the key sites in terms of socio-political evolution, gender and age dynamics, assessing the different types of social organisation that the evidence suggests to be reflected through the mortuary evidence. The second section considers the changing role of these sites. The third looks at how these results relate to the discussion of burial trends through Egypt (Chapter 5), and the fourth section discusses how the results fit with previous hypotheses on the Predynastic (Chapter 2). The fifth section reviews the value of the approach taken in this thesis.

8.1 Intra- and inter-site observations

The most revealing intra-site analysis has resulted from the statistical tests carried out on the data from Minshat Abu Omar (MAO), and the combination of statistical and spatial analysis on the data from Kafr Hassan Dawood (KHD) (Chapters 6 and 7).

The MAO I-II society is not entirely lacking in internal differentiation. The evidence suggests a variable distribution in terms of totals of goods, types, and materials coming from a distance. The distribution of artefacts, however, does not lead to the conclusion of a uniformly close relationship between grave goods and social position. There is also a weak link between totals of grave goods and/or artefact types, and the presence of distance materials. Indeed, MAO I-II is the only phase in this cemetery where distance materials are encountered as single grave goods. There is some evidence, however, for a degree of limited accessibility, or, the notion of privileged access, with the occurrence of stone vessels limited to graves of a high number of types during this phase. At this stage, however, the evidence does not allow me to draw a universally direct link between the presence of raw materials from afar and prestige or privileged access.

Children are well provided for during this stage; child burials account for a quarter of graves within the top 30 highest-ranking graves during this phase. While this might

suggest variable importance dependent on kin group associations, I must add that if variable burial orientation might be taken as an indicator of kin group ideology, then the presence of a large number of such groups is not supported. The orientation evidence suggests, moreover, a society with a good deal of internal cohesion. Another potential indicator of the type of social organisation present during MAO I-II is the presence of Palestinian ceramic imports; this might imply certain organisational requirements for participation in long-distance trade (cf. Kroeper 1989, 407). Fried (1967, 109; Section 3.2) notes that although positions of prestige are limited in ranked societies, that access to resources remains for the whole community. The degree of differentiation within the early cemetery, may suggest that we are looking at 'emergent patterns of leadership', indicating that kin groups are working together for economic reasons (cf. Service 1962, 100-101, 105-106). However, it would not appear that social positions are institutionalised at this point.

MAO I-II represents a generally poor population in comparison with the later stages of the cemetery, although while the majority of individuals are only buried with a single type of artefact, there is considerable variety in these provisions. It cannot be assumed that this directly reflects the prosperity of the living society, but it is reasonable to surmise that the expression of wealth through the funerary ritual was not a priority for the early community. From this it is possible to infer the following: 1) the lack of impetus (either internal or external to the community) necessitating differentiation of position in this manner; and 2) the low number of individuals occupying elevated positions (temporary or permanent; possibly in response to specific events) within the early community (cf. Fried 1967, 83; Johnson and Earle 2000, 44). Indigenous Deltaic kin groups might have been key within social structure at this stage, and this may also be reflected in bodily orientation, which does not hold with that most common in Upper or Lower Egypt. That social differentiation is apparent amongst the MAO I-II graves is in itself an expression of some social ranking.

The MAO III population sample, in contrast, suggests a greater divide in terms of privileged access to raw materials and higher quantities of objects by the few. Expression through the medium of the funerary ritual is very different to that witnessed during MAO

I-II. The MAO III cemetery gives the impression of quite a stark poor rich divide within the community, and the evidence suggests the presence of an inequality that was lacking during the previous phase (cf. van den Brink 1993, 298). This can be interpreted as representing a change within the structure of the MAO community, and although the sample may be lacking a number of intermediary graves, a significant increase in input to the mortuary ritual cannot be denied. It might be conjectured that access to, and indeed the existence of, specific positions within the community is not so open as during MAO I-II. This might reflect the growing influence of some individuals, be they related to certain indigenous kin groups and/or have advantageous external connections, possibly with the centralised state. If the community represented by the MAO III phase graves was not indigenous to MAO, and if they settled at the site together with the original community then we might be witnessing assertion of power by these newcomers. However, I am not necessarily insinuating that these newcomers were foreign to the Delta. Alternatively, if the lack of '"transitional" graves' at MAO can be interpreted to suggest a temporal break, then this would offer a good explanation as to why the MAO III phase graves reflect such differences within social organisation (cf. Kroeper 1987, 82; Section 6.2.3). To recap, the MAO I-II and III/IV populations show differences in terms of orientation and the types of ceramic and non-ceramic vessels present, with a lack of graves showing transition between the phases (Kroeper 1987, 82). The almost complete uniformity in burial orientation during MAO III suggests either less kin groups within the society and/or a more cohesive ideological approach to burial practice.

The MAO III phase appears to reflect a stratified society with a clear demarcation between rich and poor graves, with the archaeological evidence indicating a rise in external contacts including trade, although notably with a lesser number of Palestinian ceramic imports than in the previous phases (cf. Kroeper 1989, 407; Johnson and Earle 2000, 124, 203-204, 211). Resources appear to no longer be available to all (cf. Fried 1967, 186; Johnson and Earle 2000, 125). An increase in copper, and types of copper objects is clear in comparison to the preceding phase. These items are confined to more wealthy graves, which might indicate prestige over function, and does not imply availability to all. Increased contact with other sites might also be inferred from the greater proportion of stone vessels (the origin of the stones being southern Egypt) (cf.

Baines 2000, 38), and increasing organisation suggested by the sharp rise in potmarks in contrast to MAO I-II and the presence of two *serekhs*, both found in graves with a wide variety of types.

The MAO IV community shows similarities to both of the earlier phases. It appears to reflect a multi-tiered society with less overall inequality in mortuary provision than witnessed during MAO III. While the stark poor rich divide seen in the MAO III data is missing, suggesting that we now see more levels within the hierarchy, MAO IV presents the richest graves in the whole cemetery, in terms of ranges of artefacts types, total goods, and distance materials. The graves of most complex construction, the 'elite' burials, also date to this phase (Kroeper 1992). Although the MAO III phase showed more variation vis-à-vis grave type than the earliest phases, there did not appear to be so close an association between size or type and contents, as is witnessed in MAO IV. The possibility of growing external contact, might explain the greater number of tiers within the MAO IV community, with new positions created within society to cope with the increasing organisational needs. This evident decrease in inequality is also reflected through the changing distribution of copper, now present among a variety of graves of variable wealth. This might indicate its increasingly functional purpose, as opposed to prestige, which would be suggestive of increasing availability and possibly technological advances. It is noteworthy, however, that fewer copper artefacts from MAO IV, as opposed to KHD, can be classed as tools (cf. Tassie and van Wetering 2003, 502). It might be inferred that within the MAO IV society we witness at least one 'middle group' between the elite and the commoner, be they more technologically skilled individuals and their families, or individuals filling positions of organisational need (cf. Fried 1967, 196). The 'elite' graves might represent those individuals holding positions most closely involved with external communications, be they directly connected with the centralised state or with the local economy. This group of graves may possibly include not only individuals directly holdings such positions, but also their kin, since there are male, female (one) and child burials (Kroeper 1992, 134-136). Indeed, it seems logical to infer inherited status from the wealthy child burial within this group (Kroeper 1992, 135-136; Chapter 6). It is interesting, however, that while the single highest occurrence of potmarks within the cemetery is found within one of the 'elite' graves, most of the other

graves in this group only contain between one and six potmarks. This might lend support to the argument that some of these individuals have inherited rather than acquired their positions, although we must remain aware that these graves have been subject to plundering (cf. Service 1962, 139-140). In addition, as suggested by Service (1962, 139-140), within a stratified society there might be additional high status positions which could be fulfilled by members of the local leader's family; this may very well be reflected in the 'elite' graves. The 'elite' burials suggest a closer relationship between economic and social status than previously seen at MAO; it is strongly indicative of increasingly unequal access to resources (cf. Fried 1967, 186, 188-189).

The use of spatial analysis, complementary to the statistical analysis, has enhanced interpretation of change within social structure at KHD. The small proportion of wealthy graves at KHD suggest that only a very few individuals held positions of power and, furthermore, actually had the resources and/or impetus for this position to be re-stated in burial. The combination of spatial and statistical analysis has clarified the lack of association between high numbers of artefact types and large burials within the 'earlier' (northern) part of the cemetery, in contrast to a greater association in the later part. As discussed in Chapter 7, this might represent individuals of some elevated importance within the early community, but I would also infer that the individuals who buried them had limited access to resources, or that the deceased's position had no attached personal 'wealth' (cf. Fried 1967, 115; Section 3.2). I would infer from this that rich provisioning of the grave was not an integral part of the funerary ritual at this point, with resources being kept, either through choice or necessity, within the living economy rather than expended on the dead. The northern area of the cemetery is generally less well represented in terms of grave provisions. The largest burials, in the south of the cemetery may, however, indicate an increase in terms of external contacts. As with MAO IV, these links might have been directly with the centralised organisation, or they might have been related to the community's own economic activities, without state intervention. What is noteworthy, in terms of economic activity, is the occurrence of copper in graves with a wide range of types, which suggests that its presence is frequently related to the functional role of the individual, especially in view of the number of tools that have been found. Its frequency also indicates the possibly advantageous position of KHD on the

Wadi Tumilat, especially if copper were being obtained from the Sinai (cf. Lucas and Harris 1962, 209; Caneva *et al* 1987, 110; Rothenberg and El Gayor 1995, 147).

It seems clear, however, that the positions held by the owners of tombs 913 and 970 allowed for their kin, the community, or even the state, to ensure that their importance (or perhaps rather the importance of their position) be recognised through burial (cf. Fried 1967, 52, 188-189). These large tombs in the south suggest stratification within the society, since these are the only tombs in which we see social position equated so strongly through large tomb size, quantity and variety of grave goods, spatial distinction and especially high numbers of potmarks. One of the largest tombs also contains a *serekh* of King Narmer. However, there are clear differences in comparison to MAO IV. At MAO, it has been suggested that the 'elite' graves might represent both individuals of high status positions and their kin; however at KHD, this is not so obviously a possibility. It is conceivable that the individuals buried in tombs 913 and 970 were related, however, their kin may have not been similarly provided for because: firstly, there was not the impetus to create this extra show of power; secondly, there was not sufficient surplus wealth and labour to reproduce tombs of this kind; and thirdly, because as suggested in Section 7.1.2, they were not original members of the KHD community and they had few or no kin present at the site. While the large tombs at KHD and the 'elite' tombs of MAO IV are of very different construction, the KHD tombs are larger in terms of surface area; in fact they are of similar area to a couple of the large MAO III tombs. This might be pertinent if we remember the comments of Johnson and Earle (2000, 250) regarding the strengthening of power through means including display. The size of these tombs may have served to demonstrate power to those outside of the community.

The community at KHD shows definite signs of change to a stratified society. In discussion of MAO I-II, I raised the issue of whether variety in burial orientation can in any way be taken to indicate differing kin group ideology. At KHD there is a decreasing variation in orientation as the site grows from north to south. If, therefore, orientation does indicate the preferences of differing kin groups, then we might witness: 1) a decrease in the importance of these kin groups; or 2) less ideological distinction between these groups. One explanation for this might be that increasing contact with the

centralised state is creating greater ideological cohesion. Despite the fact that a stratified society might be perceived through the later developments at KHD, the evidence from the less prosperous final stages of the site indicates a decrease in social stratification. One indication of this is through the placement of the youngest grave at KHD (1041) back in the earliest burial area. This grave contains poor provisions in comparison to the large tombs in the south and the change of location might suggest: 1) the inability to construct and furnish such impressive burial monuments; and 2) the need to legitimise an individual/group with ancestors (cf. Service 1962, 106; Fried 1967, 116; Yoffee 1993, 71). A word of caution is, however, appropriate. Until the graves at KHD have been assigned to more tight chronological divisions, and until the very northern extent of the cemetery has been explored, the possibility remains that the earliest groups of burials may be indicative of less differentiation than is currently ascertainable. While we are aware of a north to south developmental trend, through the dating of ceramic assemblages in some of the tombs, the degree of variation from this trend awaits clarification. Section 8.3 discusses change within social organisation in the Delta, with the mortuary evidence showing little evidence for differentiation within the early cemeteries (el-Omari and Merimde Beni Salama (c. 4600-4400 cal BC, Mortenson 1999a, 592; c. 4750-4250 cal BC, Eiwanger 1999, 501, 505), yet increasing differentiation through the mortuary ritual from c. 4000 BC onwards (for example, Heliopolis, Mortenson 1999c, 367).

Out of the main three sites being analysed here, Kufur Nigm (KN) presents the most restrictive dataset, however, a number of observations can be made with regards social organisation and differentiation as viewed through the burial evidence. The evidence from KN does not suggest an extended period of development within this cemetery. One indicator of this is the great uniformity of burial orientation, which suggests that the community already had a cohesive ideological system; it does not reflect the presence of a number of kin groups with differing approaches to the funerary ritual. This is also reflected in the limited developmental range of grave types. It is of import that, with the exception of jar burials, the other grave types represented at KN show considerable effort being expended on the burial. While the contents of the graves suggest the varied distribution of wealth across the cemetery, the large number of *serekhs* may indicate a close relationship between certain individuals and the centralised organisation. The

virtual lack of copper amongst these graves might have implications for the trading interests of the community. However, contacts with the south are reflected through the relatively high proportion of siltstone vessels in evidence, notably with the majority associated with two graves.

KN shows definite signs of stratification, as strongly exemplified through the variable distribution of types and totals of goods. It might also suggest a multi-tiered community at KN. The limited range of grave types (mainly of sophisticated construction), and the consistency of orientation, lead me to suggest a brief period of use and/or development within this cemetery, I am also tempted to imply from the evidence that this burial area might have been of restricted use.

The analysis has shown the greatest similarities between KHD, KN, MAO IV and Tell Ibrahim Awad (TIA). The population at KHD, however, also has similarities to the social organisation of MAO I-II. The KHD data mainly differs from that of MAO IV, and KN, in that it does not suggest the same type of multi-tiered hierarchy. While there are a number of larger graves, and high quantities and ranges of artefact types, the number of individuals with poorly provided for graves is very much greater than for the MAO IV community. Admittedly, the bias of the sample from MAO IV must be taken into account.

It is possible to observe development from kin-based community organisation to organisation increasingly affected by external contacts, economic concerns, and possibly a direct relationship with the centralised organisation. Changing patterns of burial orientation suggest early ideological heterogeneity at KHD and MAO that might reflect individual kin group preferences, with a later, more homogeneous ideological approach (cf. Carr 1995, 157). Only the latter phase of development is in evidence at KN. The greater uniformity at KN, however, corresponds well with the differentiation between the MAO I-II and III/IV graves, since it is during the latter phases that there is a significant increase in cohesion visible through burial orientation at all three sites.

Changing gender dynamics are in evidence between the temporal phases of MAO. The evidence suggests changing social roles accompanying the rise of centralised organisation, although not direct inequality or apparent male domination (contra Johnson and Earle 2000, 250, 251). Through the phases, females become associated with a wider variety of artefact types and high Distance Scale objects. This might indicate: 1) greater access to materials; 2) the burial of types closely connected to their social roles (cf. Savage 2000); or 3) the membership in important kin groups. The third option might reflect the collection of a specific set of goods during association with original kin groups or objects acquired after they developed new kin ties through marriage. Membership of an important family might also result in a more varied group of objects from various distances. However, males develop a closer relationship with large graves and high overall totals of goods. The close relationship between males and large graves might suggest that men were holding positions that provide increasing access to manpower, in addition to other resources; the importance of the individual's position being reflected through this medium. This might reflect a change in descent patterns (Johnson and Earle 2000, 251) and/or it might reflect the preferential involvement of males with the centralised state, or inter-community activities (trade, for example); these may have allowed for greater mobilisation of labour. That females, however, remain strongly associated with diverse provisions surely indicates that their social roles were maintained, with males moving into additional roles; roles with greater involvement in inter-community dealings and contact with the centralised organisation. The presence of increasingly large and well-provisioned graves, particularly when coupled with spatial distinction, as has been witnessed at KHD (Chapter 7), may well reflect these new roles, and emphasise the power commensurate with the position that 'exists independently' of the individual (Service 1962, 142).

In terms of looking at large graves as markers of status, I think it important to note that size might, in its own right, have been integral as a measure of importance. Once the burial has been made, it is the memory of what was in the grave, and the actual visual impression of the grave within the landscape that remain (cf. Ellis 1992, 252). This may have proved an important, and moreover lasting, aspect of the burial, especially for enforcing power and position to outsiders, perhaps the least likely group to have actually

witnessed the funerary ritual and seen the funerary provisions. Examples from other countries suggest the elevated importance of the actual funerary monument in comparison to the grave goods inside. One such example was noted in Chapter 5, whereby the tumuli of the Saharan Pastoralists constituted the main expression of position (MacDonald 1998, 81, 85). In addition, Chapman (1981, 80) remarked upon the necessity of symbolising control in a visible manner within the landscape, expressing position and access to manpower in a manner that could be clearly seen (see Section 3.3).

Changing treatment of children and young adults may indicate inherited status, such as the exceptionally rich child's tomb within the 'elite' tombs at MAO. Although I have stated above that this particular tomb most probably represents inherited wealth/position (cf. Kroeper 1992, 140), in some contexts, it can be problematic to determine whether grief or inherited status is key. Grief is naturally embedded within the funerary ritual, and children (not including neonates and babies) and young adults are usually fairly well provided for in terms of artefact types and totals at MAO. However, the burial of two children from KN in coffins, as opposed to the usual jars, may be revealing if coffins are to be equated with status (cf. Quirke 1992, 143).

In Section 7.1.2 I proposed that the owners of tombs 913 and 970 might have been relative newcomers to the KHD community; it might further be conjectured that they came together with their institutionalised positions. The combination of these large tombs with increasing numbers of potmarks, together with such high numbers and quantities of types, and changing ceramic types (including bread moulds and beer jars) hint at social change indicative of an increasingly hierarchical society. From the evidence, it is also possible to infer that only a few individuals at KHD held positions of raised importance, and that few were probably directly concerned in matters relating to the economic organisation of the site. The question is, how did the individuals, such as those buried in tombs 913 and 970, gain such privileged access to the large quantities of materials in evidence in their burials and, importantly, to the degree of manpower involved in constructing such tombs (cf. Chapman 1995, 46). There are a number of options that are possible. That this change occurs relatively late at each of the sites might represent a bid by the centralised organisation to gain control over the profitable activities

of local communities. This is only one option, however, and is not a foregone conclusion. Alternatively, attempts may have been made by local indigenous leaders to raise the importance of their own positions, and that of their community, and directly profit from interregional trade/contacts (cf. Paynter 1989, 382-383).

While there are clear similarities in the materials distributed at the sites, differential accessibility is also evident. Through the MAO phases a growth in the number of materials and types within the mortuary assemblage is apparent; this is similarly detectable through the spatial development at KHD. The increase in diversity of types might represent greater inter-community contact, greater contact with the centralised state, and increasing social differentiation (cf. Carr 1995, 171). The analysis has shown a degree of homogeneity between the roughly contemporary data from KHD, KN and MAO IV, both in terms of the most common artefact types, and indeed in terms of the 'ranking' of artefact types. Despite this similarity, however, there is a clear differential in the distribution of artefact types at the sites. By looking to the occurrence of certain types/materials with a high/low number of other types, I have been able to ascertain the degree of restriction of materials in certain contexts. The distribution of copper is a good example. Copper is most frequent at KHD, and it is distributed throughout a wide variety of graves, which is not the case at MAO, or KN. The distribution of beads also shows heterogeneity, since at KHD, while the distribution is less frequent than during MAO IV, these items are found in a wide range of graves, whereas at MAO IV and KN they are restricted to graves with a higher range of artefact types. While there are clearly individuals within the KHD cemetery that have been accorded special treatment with regards high quantities of grave goods, there appears to be a wider accessibility to various types of goods than at the other sites (cf. Fried 1967, 109; Johnson and Earle 2000, 126). I would infer from this evidence that the association between economic status and position is only more closely linked in the later stages of the cemetery. In view of the differences exhibited between KHD and the other sites, I would tentatively suggest that there was another more dominant centre in close proximity to KHD, which may be confirmed or refuted by further fieldwork in the region. One such contender may be the large tell site of Tell er-Rataba, to the east of KHD in the Wadi Tumilat. Hendrickx and

van den Brink (2002, 371) note a possible earliest date of Naqada III for activity at the site (cf. Schott *et al* 1932, 53-54).

Clear similarities and differences within the mortuary data reflect variable types of social organisation on both an intra- and inter-site basis. One of the key differences is in grave type. Only MAO reveals an extensive developmental pattern from oval pits to mud-brick chambered graves. KHD, however, while exhibiting a range of grave types, is alone in not having revealed any evidence for mud-brick architecture. In contrast, the fact that, to date, a much more limited and sophisticated range of grave types is apparent at KN and TIA suggests restricted use of these cemeteries to an 'elite' group, covering a shorter time-span. From the data analysis it is clear that KHD does have a few exceptionally well constructed and provided for, large, graves. However, by virtue of the fact that there is such a degree of inequality between these graves and the majority of others, multi-tiered stratification (as observed in MAO IV) would not seem to fit at KHD. In addition, KHD does not appear to have such an extensive elite group as might be interpreted from the evidence at MAO and KN. While some of the burials directly around the large tombs 913 and 970 might actually comprise part of this elite group, the wealth and/or impetus behind the large tombs appears lacking.

8.2 The changing role of sites within the northeast Delta

The discussion in Section 8.1 has revealed some of the effects of increasing social complexity at the key sites, but only shortly after we witness their height of prosperity, and surely only affluence for certain sectors of the community, we observe their decline in prosperity. This decline is very probably in response to the dynamics of change within trade patterns in the Early Dynastic period, changes that are surely inextricably linked to the rise of the unified state.

The results of the data analysis strongly suggest increasing contact over time both with other communities and with the centralised organisation within Egypt. This is most clearly exemplified at MAO, where increase in social differentiation has been witnessed through the temporal phases, and is further supported by the results of the spatial and statistical analysis at KHD. It appears that over time we see increasing numbers of types

in graves, especially in conjunction with larger quantities of and varieties of grave goods; previously a large grave pit might have been significant in itself or served as sufficient remembrance of an important individual. As noted in Section 8.1, increasing numbers of potmarks might suggest links with the centralised organisation, as might the changing types of ceramic vessels, with the appearance of bread moulds and beer jars within the larger tombs. These hint at the necessity of an increasingly structured social organisation, but also suggest that only a few individuals had direct involvement with the centralised organisation.

It appears that the increase in central organisation also plays a serious role in the loss of prosperity within these communities, and ultimately the disuse of the cemeteries at KHD, KN and MAO. Since the settlements at these sites have not yet been investigated, it is only possible to infer from the burial evidence that they were abandoned. TIA is the exception since there is 'uninterrupted' activity at the site from the Late Predynastic through to the Early Dynastic, and subsequently there is evidence for use of the site up until the middle of Dynasty XII, in cemetery, settlement and temple contexts (van den Brink 1988, 77; 1989, 78; 1992a, 45-54). TIA appears to have been a very important centre, certainly in terms of ritual, with an evolving temple complex.

Throughout Chapter 6, trade and functional roles were featured in the discussion. I have suggested that KHD might have been involved in trade and the working of raw materials, such as copper, from the Sinai. While we do not find a vast array of copper artefacts at KHD, it represents the widest range and highest quantity out of the sites under investigation; furthermore it must be remembered that Maadi is considered to have played an important role in metallurgy (and in trade between Upper Egypt and Palestine), yet no copper artefacts are found within the mortuary context (Hoffman 1980a, 207; van den Brink 1988, 82-83; 1993, 297-298; Caneva *et al* 1989, 291-292; Midant-Reynes 2000, 216; Hendrickx and van den Brink 2002, 347). The presence of copper vessels in one of the graves at TIA have also caused van den Brink (1988, 78) to remark upon the probability of 'intensive contacts' with Early Bronze II 'copper mining colonies' within the Sinai. The evidence at MAO is considered to suggest that this site was involved in trade with the Levant, although it is noteworthy that the majority of imported vessels date

to the earlier graves (Trigger 1987, 59; Kroeper 1989, 407). This could, however, suggest that by MAO III and IV increasing control by the centralised organisation, or increasing monopolisation by local traders resulted in increasing numbers of these vessels moving directly through the site to other destinations.

As I have commented above on the quantity of copper items found at KHD, Kroeper (1989, 420) similarly remarks that while relatively few Palestinian ceramic imports have been found at MAO, this still 'deserves some comment' since substantially greater amounts have not been found from other Predynastic sites. Kroeper (1989, 420) comments that the position of MAO, on the Pelusiac branch of the Nile, 'must have given this village some status as a trading post', and that this status is reflected in the presence of such large and well-furnished tombs during Dynasty I. Trigger (1987, 59) further remarks of MAO (and TIA) that they were probably either trading directly with Palestine, or possibly through settlements along the north Sinai coast. Kroeper (1989, 420) also considers that MAO may have been an 'official outpost' at the time of the unification (Kroeper 1989, 420). The Dynasty I tombs could well represent the arrival of individuals involved in centralised organisational networks, aspiring to take advantage of the trading potential of these sites (cf. Kroeper 1989, 420; Hassan 2000a, 39). With the exception of TIA, which also has evidence for imported ceramics (van den Brink 1988, 80; 1993, 297), the sites appear to go out of use shortly afterwards. This re-affirms the idea that the centralised organisation has asserted their control over the functioning of these sites, and/or subsequently re-directed trade, effectively removing the middlemen from the picture. If trade was central to the economy of these sites, then it is not surprising that these sites appear to go out of use following the increasing monopolisation of trade networks by the centralised organisation.

Kroeper (1989, 420) raises an interesting alternative explanation of the changing course of the Nile branch, which would also effectively remove the advantage previously held by MAO, since the settlement was considered to have been a 'landing point for ships arriving from Palestine and a port of departure' for Egyptians travelling into Palestine and to the Middle East (Wildung 1984, 269; cf. Andres and Wunderlich 1992, 162). Riverine and environmental changes may similarly have been additional dynamics in the demise of

KHD and KN. The mortuary evidence implies that these communities diminished in prosperity and faded out of existence not long after we have evidence for the wealthiest tombs, suggesting an increasingly competitive arena, and possibly representing the period of the strongest links with the centralised organisation. At KHD we find the latest grave in the cemetery, grave 1041, positioned in the earliest burial area of the cemetery; it is substantially smaller and less well provided for than the tombs in the south of the cemetery. It is thought that it was situated so as to prove legitimisation through relationship with the ancestors of the individual (Hassan 2000a, 39), perhaps after the site's possible involvement with the centralised organisation had passed, and after its prosperity had declined.

It appears that trade routes change as a result of the formation of the Egyptian state, with the Sinai coastal route and the land route to the southern Levant decreasing in importance (Wilkinson 1999, 158; Hassan 2000a, 39; Hassan *et al* in press). Wilkinson (1996, 93; 1999, 160) remarks that the concentration of sites within the east Delta may be explained by the 'added attraction of access to trade routes – at a time when contacts between Egypt and the Near East were intensifying', but notes that by the end of Dynasty II Egyptian trade with the southern Levant had dropped dramatically; notably graves at MAO date as late as early Dynasty II (Kroeper 1996, 79-81). This serves to reinforce the explanation for the sudden demise of sites in the northeast Delta, sites that had previously held important roles as middlemen in trade networks. Kroeper's (1989, 420) remarks concerning changing courses of branches of the river are also pertinent since the sites were located close to various branches/tributaries of the river, and subsequently any environmental changes affecting the functioning of these branches would have had a serious impact on these sites, moreover so, when combined with the threat of the changing political environment in Egypt. Hassan's (1988, 165-166) comments on the decreasing Nile floods as a further 'catalyst' in 'expansion northward' from Upper Egypt are also significant. The decline of sites in the northeast Delta, and the possible increase in maritime trade during the Old Kingdom, is significant in light of the persistence of occupation at Buto into this period - Buto being situated in the northwest Delta and not affected in the same manner by the monopolisation of land routes across the Sinai and up to Palestine.

8.3 The northeast Delta and the bigger picture

Chapter 5 dealt with observable trends in mortuary practice throughout Egypt and into the Sudan, from the Neolithic to the Early Dynastic. Reconsideration of the results from this chapter, in light of the data analysis in Chapters 6 and 7, allows me to make further comment on the hypotheses tested. It is possible to assess how KHD, KN, MAO and TIA fit into the bigger picture, both in terms of how they behave in comparison with the other Lower Egyptian sites discussed, and sites in the Nile Valley.

It is clear from the foregoing discussion that intra-cemetery burial differentiation is observable at all of the key sites, and that social differentiation through burial might be most explicitly expressed in the graves of individuals in particular contact with the centralised state. However, that social differentiation is visible at MAO, for example, from Naqada IIC (c. 3650 BC), means that it is inappropriate to single this contact out as *the* dynamic behind differentiation. These communities were involved to varying degrees in trade with the Levant, Sinai, and Upper Egypt, and the intra and inter-community organisation responsible for its coordination must therefore have been a causal factor in the mortuary differentiation that is observed.

In Chapter 5 I raised the issue of decline in the importance of kin groups in line with growing centralisation. This does appear to be the case by Dynasty I (Naqada IIIC1, c. 3100 BC onwards). The discussion of changing gender dynamics (Section 8.1) considered the possibility of shifting descent patterns as one explanation for the increasing male association with large graves and high totals of goods. This fits with the hypothesis of an increasingly competitive arena in the northeast Delta, which induces the need to emphasise the deceased's position through privileged access. If males were occupying an increasing number of roles involving inter-community contact, or contact with the state, then the mounting importance of these roles, rather than the sole importance of the individual, alleviates the necessity to attach so much weight to one's kin group.

The thoughts that I expressed concerning different types of social organisation and their reflection through the grave unit appear to be of relevance on both an inter- and intra-

regional scale. While some differences are perceivable, such as the lack of a clear relationship between older individuals and increased wealth (as a sign of ranked society), there is evidence for inherited wealth at MAO in the form of richly provided for child burials in MAO IV (Naqada IIIC1-C2, c. 3100-2900 BC), especially the 'elite' grave 2275, at a point where there is definite evidence for stratification within the cemetery. Furthermore, the presence of two child burials in coffins, as opposed to jars, at KN might also indicate raised importance through birth. It is notable that the early Lower Egyptian cemeteries (c. 4750-4250 cal BC) appear to reflect broadly egalitarian societies with very little differentiation ascertainable through the burial record; the majority of grave goods, where they exist, are ceramic vessels (Section 5.2.1). From c. 4000 cal BC, however, more differentiation is visible, if not to the same scale as in the Upper Egyptian cemeteries; and from Naqada IIC (c. 3650 cal BC) onwards there is increasing input into the grave in Lower Egypt.

When considering the similarities and differences with other sites in Lower Egypt, the comments of David (1992, 198) are once again pertinent, in so far as we do witness periods where grave good provision is anything but plentiful, suggesting the lack of 'social surplus' to invest within the grave. This is also detectable to a degree during MAO I-II and in the northern (earlier) area at KHD (c. 3300-3100 BC, Naqada IIC-IID2 and Naqada IIIB, c. 3100 BC respectively). While the northeast Delta sites have spatially discrete cemeteries, following the tradition present in Upper Egypt since Badarian times (c. 4400-4000 cal BC), the number of poorly provided for graves in the early stages of both MAO and KHD still partially reflect what seems to be the early Lower Egyptian tradition of ploughing resources back into the economy, rather than into the grave.

Although there are similarities between the northeast Delta sites and the earlier/contemporary Lower Egyptian sites vis-à-vis keeping resources within the living economy, there are also similarities with the earlier Upper Egyptian cemeteries in terms of spatial distribution, grave types, grave goods and gender associations. At KHD and MAO, it is possible to see similarities in the spatial growth of cemeteries as witnessed from as early as the Badarian period (c. 4400-4000 cal BC) in the Nile Valley, with the combination of frequent oval pits and a few rectangular graves. In addition, the grave

goods found in the Delta are very similar to those placed with these early burials (Badarian period and onwards): flint tools, palette, items of adornment, and ceramic vessels (single or otherwise). In terms of grave types, greater similarity still is observable between KN, MAO (Naqada IIIC1-C2), TIA and the Upper Egyptian site of Armant (Naqada IC-IIIA2, c. 3900-3300 BC), where there are multiple chambered mud-brick tombs (Naqada IIIA) together with a large quantity and variety of grave goods. The mud-brick chambered tombs at KN, MAO and TIA date to between Naqada IIIC1-D (c. 3100-2900 BC). In terms of gender dynamics, there are similarities to those observed in the northeast Delta sites and the 'valley' cemetery at Kafr Tarkhan (Naqada IIIA2-IIIC1, c. 3300-3000 BC), in the northern Nile Valley (Figure 5.1). At Kafr Tarkhan, females are associated with the highest overall goods, and artefact types, yet males with the largest tombs (Ellis 1992, 245, 248, 252, 253). The evidence suggests that although certain aspects of earlier Lower Egyptian burial customs are present within the cemeteries of MAO I-II and KHD, the development of these cemeteries and the burials at KN and TIA suggest a greater degree of similarity with Upper Egypt. Changing gender dynamics, for example, would appear to have their roots outside of the Delta.

The evidence suggests that despite ongoing trade involvement between Lower and Upper Egyptian communities probably since the early fourth millennium BC, and the probable knowledge that the Upper Egyptians were gradually obtaining increasing amounts and varieties of goods for the grave, the Lower Egyptian communities either chose not to adopt this practice, or were unable to do so for economic reasons, until later. I believe that it is not until external contacts increase to the degree that induces competition, that we really see a shift in the need for individuals or groups to enforce the status of the deceased through the medium of burial. The funerary ritual and remaining grave very probably also acted as a means by which to show power and control within and outside of the community, be it for a powerful kin group or a group whose power derives through contact with centralised organisation. Such demonstrations of power are clear by the later stages of the cemeteries at KHD and MAO, and at KN and TIA (Naqada IIIC1-D (c. 3100-2900 BC). The comments of Seeher (1992, 231-232) that the influence of the Upper Egyptian culture over Lower Egypt resulted in the change of approach to the burial record seem appropriate, with increasing provisions visible in Lower Egypt from Naqada

IIC onwards (c. 3650 BC). Other possibilities are, however, considered below in Section 8.4.

In terms of the diversity of modes of inhumation discussed (Section 5.3), as expected, modes of inhumation appear to become more homogeneous as the centralised state becomes increasingly influential. The northeast Delta sites essentially agree with the supposition that there was greater orthodoxy in terms of orientation in Upper Egypt than in Lower Egypt. Variation in this respect is witnessed both at KHD and MAO, especially in the early areas of the cemeteries, although by Naqada IID2 (c. 3100 BC) at MAO the orientation of head to the northeast and face to the south/southeast is most common and throughout the KHD cemetery the head to the northeast and face to the east position is most usual. Burial positions in the north of the site at KHD do, however, reflect the Upper Egyptian trend of head to the south and face to the west, persistent since Badarian times (4400-4000 cal BC). This might suggest either a degree of direct influence by individuals whose kin groups were indigenously Upper Egyptian, or secondary influence coming in alongside trade.

It is interesting that there are such a high number of multiple burials at KHD into the Early Dynastic period, particularly so when the same is not apparent from the available data for KN, MAO or TIA. While this practice was persistent in the Nile Valley during the Predynastic period (from the Badarian period), and is attested in the Lower Egyptian Neolithic (at el-Omari, 4600-4400 cal BC), albeit extremely rare, multiple burials become less frequent by the Terminal Predynastic period. Two sites comparable with KHD in terms of the persistence of multiple burials are Helwan and Elkab. In view of the decrease in multiple/secondary burials at this period, I contend that this practice has strong links to kin groups, thus accounting for its decrease as centralised organisation increases.

In Chapter 5 I stated that there were more regional differences apparent in Lower Egypt than Upper Egypt, and from the data analysis in Chapters 6 and 7, I hold with this. I maintain the hypothesis that Predynastic to Early Dynastic Lower Egyptian sites reflect changes in ideology that may be driven by changing social structure, ultimately reflecting

both a greater degree of contact between sites and, later, contact with the centralised state. Earlier variation witnessed at KHD and MAO may be closely linked to the presence and importance of different kin groups, with increasing homogeneity reflecting the decreasing importance of these groups. Intrinsically linked to this change is the increase in contact both with other communities, and with the centralised state, change potentially responsible for widening the gulf between positions of importance and the individuals holding them.

8.4 Perspectives on the Predynastic

For the Predynastic to Early Dynastic period, hypotheses taking the crucial role of the environment and region into account remain indispensable. The Delta environment and proximity to resources has had significant effect in terms of the role of the Delta communities in respect of their economic livelihood. The northeast Delta sites most probably held varying degrees of importance as trading centres, being directly or indirectly in connection with the Levant, Sinai and/or Upper Egypt, contra to Baines' (1995) comments that long-distance trade might have grown out of state formation. The effect of a new centre within the region at Memphis, however, is likely to have had serious repercussions on the economic functioning of the sites. That the sites display a degree of internal differentiation in social organisation from their beginnings, suggests that they had the organisational capability to maintain trade involvement by taking advantage of their geographical position. Yet, their success also inspired an Upper Egyptian bid to exploit the region both to control this trade, and also possibly to take advantage of more favourable environmental conditions (cf. Hassan 1988, 165-166). That the northeast Delta sites were able to benefit and strengthen their economy through trade, and feed on the growing desire of Upper Egyptian leaders to emphasise their position through grave wealth, stands in opposition to Bard and Carneiro's (1989, 19-22) comments that Lower Egyptian communities had no economic base for higher levels of 'socio-political complexity'. The interpretation of the analysis in Chapter 6 and discussion throughout this chapter suggests rather the lack of impetus for increased socio-political complexity (cf. Butzer 1976). It seems, in fact, that the early Deltaic tradition of either not wanting, or not being able, to lavishly provide for the dead has encouraged

views such as the necessity of looking to contacts with the Near East to explain 'high levels of material and artistic culture' in the Delta (Baines 1995, 103).

Spencer's (1993, 47) comments also fit here, since he considered that the Lower Egyptian communities retained their indigenous character until the unification. I would add, that the evidence suggests that the Lower Egyptian propensity for keeping wealth within the community was partially retained up until the point where involvement with the centralised organisation becomes more apparent. It is important to stress that the direct effects of contact with the centralised organisation are not necessarily responsible for changing attitudes to burial provision, however, the evidence of the large tombs at KHD (Naqada IIIC1, c. 3100-3000) and the mud-brick tombs at KN, MAO (Naqada IIIC1-C2, c. 3100-2900) and TIA (between Naqada IIIC1-D, c. 3100-2900 and later) show a closer association between economic status and social status than previously witnessed at these sites (cf. Fried 1967, 52, 188-189). In addition, the fact that the large tombs 913 and 970, and other smaller yet wealthy burials in their close vicinity (890 and 956) contain storage jars, beer jars and bread moulds, maintains the suitability of the comments of Geller (1992) and Hendrickx *et al* (2002), with regard to the possibility of certain ceramic types being reflective of increasing centralisation and, possibly, redistribution. Notably, the chronologically latest tombs at MAO contain large storage jars and wine jars (Kroeper 1987, 77-78) and, furthermore, bread moulds are in evidence at TIA within the context of the Naqada IIIA-B complex (van den Brink 1992a, 53).

Hoffman (1980a) was a proponent of considering societal specifics, and in turn emphasised the intrinsic differences between Lower and Upper Egypt during the Predynastic. The data from the northeast Delta support his belief that Lower Egypt should not be labelled as inferior to Upper Egypt, but different. Hoffman (1980a) considered that the Lower Egyptians were re-investing in their economy rather than showing their wealth, and the gradual change from this apparently indigenous trend to a greater concern with re-enforcement of position through the grave is supported through the research carried out here. Köhler's (1996, 216-218) suggestion that a range of ecological, craft specialisation, and economic factors may have been behind the differences between the north and south are also borne out in light of the evidence

considered. On the other hand, it is apparent that these sites display different types of social organisation to those seen earlier in the Delta. The early settlers at KHD and MAO show comparatively little internal differentiation in terms of grave wealth, which supports the hypotheses that they were not functioning within a highly competitive arena, however the inclusion of a wider range of artefact types within the funerary record does suggest the desire or need to show at least one's role within society through the medium of the funerary ritual. It is not until the later stages at KHD and MAO (Naqada IIIC1-2, c. 3100-2900 BC) that we witness the type of display of position through grave wealth as seen in Upper Egypt, which suggests monopolisation of the economy of these communities by the few. Hassan's (1988, 172) comments regarding the manipulation of power seem to be appropriate in view of the evidence from KHD and MAO. They are perhaps especially relevant for KHD, where we witness apparent development and prosperity being closely followed by terminally diminishing prosperity and a possibly a decrease in stratification by the final stages of the cemetery's use (cf. Hassan 2000a, 39). Furthermore, from the evidence for a low frequency of wealthy graves coming towards the end of the sites' use, we might imply that these individuals are being legitimised with wealth that might previously have been re-invested in the economy (cf. Hoffman 1982a, 130).

Comments regarding changes between the indigenous Delta culture and the Naqada culture are especially relevant in view of the mortuary data. Van den Brink (1988, 77) considers there to have been increasing contact between sites by the Early Dynastic, in view of the increasing similarity between the archaeology at TIA and both Delta and Nile Valley sites. While we might see Upper Egyptian influence in the Delta as responsible for changes in grave types and quantity and types of provision, it is still important to consider the possibility of other sources of change (cf. van den Brink 1989, 78-81). Heterogeneity may also reflect kin group variation and influence coming in alongside raw materials and/or traded items from the Sinai and Palestine, rather than reflecting direct influence or control by Upper Egypt (cf. van den Brink 1989, 78-81). The high number of multiple burials at KHD (up to Naqada IIIC1, c. 3100-3000 BC) for instance, might indicate that while kin groups decline in overall importance within the community, or on

the inter-regional scale, that we also witness the persistence of such practices in addition to those suggestive of influences from other areas.

The lack of sudden transition seems clear, according with Köhler's (1996) view that Upper and Lower Egypt were in contact from the Early Predynastic period onwards. It seems likely that a degree of cultural similarity might have persisted for a considerable time, which is supported, especially, through the evidence from MAO and KHD, where we have longer periods of cemetery use through which to observe change (cf. von der Way 1992, 4-5). It appears that the dynamics of increasing inter-regional contact and the presence of Upper Egyptian chiefs within the Delta, in a bid to control trade, create the competitive element that is reflected late in the history of KHD and MAO, and at KN and TIA (von der Way 1992, 4-5; cf. Spencer 1993, 53-57; Köhler 1996; Seidlmayer 1998, 30). It is at this point at which we see the increasing expression of socio-economic status through grave wealth, possibly in an attempt by individuals to hold onto their territory and trade links (cf. von der Way 1992, 4-5; Spencer 1993, 53-57; Köhler 1996; Seidlmayer 1998, 30).

The evidence for mud-brick at KN, MAO and TIA, but not at KHD, is revealing with regard to the different types of social organisation at these sites. Its absence at KHD might, therefore, suggest that KHD was in close proximity to a site more directly involved in trade networks, a more 'urbanized' site with closer contacts to the centralised organisation (cf. Spencer 1979, 6). According to Spencer (1979, 6), the origins of mud-brick architecture appear to lie in the main Late Predynastic settlements (Naqada IIC, c. 3400 BC; cf. Tassie and van Wetering 2003, 502). The earliest use of mud-brick architecture in the Delta dates to early Naqada III settlement contexts (including Buto Stratum III and Tell Ibrahim Awad phase 6), corresponding to the date of the Libyan palette (Levy and van den Brink 2002, 8, endnote 22; cf. Spencer 1979, 5; van den Brink 1988, 77, 80; 1989, 89). The earliest mortuary evidence under discussion, however, is from Naqada IIIC1 onwards (c. 3100-3000 BC). Since no mud-brick walls have as yet been identified at any of the Terminal Predynastic to Early Dynastic settlements in Lower Egypt, it has been suggested that the depiction of brick walls around the 'towns' on the palette may be iconographic representations (Levy and van den Brink 2002, 8, endnote

31). The lack of evidence for invasion at the key sites adds further weight to the possibility of the palette representing the foundation, rather than destruction, of towns in the Delta (cf. Wildung 1984, 269; Bietak 1986, 32; Pérez-Largacha 1994, 492; Wilkinson 2000). The evidence thus seems to reflect socio-economic change, as purported by Kaiser (1956).

The research carried out here further enforces the view that differences between Upper and Lower Egypt cannot be viewed in terms of superiority and inferiority. The roles played by the sites in the northeast Delta suggest that appearance in terms of social organisation is reflected quite differently through the mortuary record. This would appear due to regional differences in the north, when compared to the south, the different environments, including the occupation of advantageous positions on trade routes to the southern Levant and across to the Sinai. The Lower Egyptian cemeteries of the Terminal Predynastic to Early Dynastic period show a definite transformation from an organisation most probably based on kinship (with the presence of a few individuals of raised importance) to a point where links with other communities and the centralised state become increasingly important. Change in social differentiation as expressed through the mortuary record is clear, especially at KHD and MAO, strengthening the argument that Upper and Lower Egypt originally had quite different agendas (cf. Hoffman 1980a, 195, 200).

Increase in the expression of mortuary social differentiation in Lower Egypt has been traced throughout the Predynastic from a relatively egalitarian society, with a vast majority of simple graves displaying minimal differentiation, to the key sites, with a few individuals displaying raised importance, to the point where there is a far greater array of mortuary differentiation. These changes would firstly seem to result from an increasingly competitive environment, perhaps driven by increasing contact with other communities within the region, and finally by centralised organisation. We witness therefore, at KHD and MAO, a development from a funerary ritual with commonalities to the earlier Lower Egyptian sites, although already with greater social differentiation, to the point where increasing numbers of graves reflect the elaboration that has been witnessed in the earlier and contemporary Upper Egyptian burial record.

The analysis of the four sites serves both to confirm and refute previous views on the Delta during the rise of social complexity. The environment is important for the socio-economic base of these communities, with inter-site differentiation visible in terms of regional importance and the degree of contact with the state. The lack of evidence for sudden change suggests gradual cultural transmission from Upper Egypt, but the persistence of a number of indigenous Deltaic, or kin-based, practices. While status is not overtly stressed through grave wealth until the latter stages of the cemeteries' histories, there is, nonetheless, evidence for raw materials acquired from a distance, from their initial stages. These materials, together with elaborate grave construction, ultimately serve as the expression of social position when the need arises. The rise of the state appears to have a staggered effect on the sites. On the current evidence, KHD appears to go out of use first, followed in Dynasty II by MAO. While the KN cemetery examined here falls out of use at around the same time as KHD, there is evidence for Old Kingdom settlement remains, which may or may not indicate that another group of individuals monopolised the territory for a longer period. Although the current mortuary evidence from TIA is extremely limited, it appears that the site maintained importance as a shrine from Naqada IID2 until Dynasty XII.

8.5 Methodological review and future research

It has proved beneficial to include a wide variety of variables within the analysis, and to compare the data through standardised criteria. The *jaccard* analysis proved important in establishing links between individuals of either sex and specific materials/types, and observing variation in the presence of materials and types through time. This then served to create additional expectations for the subsequent stages of analysis, and allowed for these expectations to be substantiated or otherwise. The *socistat* approach allowed me to look more closely at the distribution of types between sites, and consider reasons for the wide or narrow distributions at different sites. This analysis also further strengthened some of the observations made in *jaccard*, especially those concerning male and female associated artefacts and their manner of distribution. The frequency distribution analysis in *Excel* also proved particularly effective in establishing basic differences between the sites in terms of social differentiation and the desire or ability to acquire certain raw materials; it has helped to illuminate when, where and why competition might be arising,

and how position might have been re-enforced through burial. We have witnessed, particularly from the MAO III and IV data, that complexity and inequality do not necessarily equate. It has also proven absolutely key to keep in mind who was doing the burying. The bivariate analysis in *Excel* has, in particular, served to clarify that once alternative approaches to wealth and effort are considered it might seem less appropriate to rely upon a single variable as an indicator of wealth or effort.

Spatial analysis has proved especially productive in terms of opening up new lines of thought, and it has also proved quite revealing in terms of kin group considerations and fluctuations in their importance. The opportunity to consider the multiple burials through spatial analysis has furthermore proved insightful, and clarified that this group of inhumations does not follow the trends seen in the main dataset. It has been integral to include them within the analysis, albeit to a lesser degree, since they widen the potential in terms of kin group study, also presenting the possibility to investigate special functional roles of certain individuals within these groups.

I feel that these analytical approaches to utilising standardised criteria have much to offer for future research. I believe that I have justified the value of using such a wide range of variables, rather than restricting their use through the rational fear of introducing too much subjectivity. In my future research I intend to develop upon the analytical techniques that I have used here, and to integrate spatial analysis to a greater degree, due to its ability to draw out vital additional patterns and make the data more visually accessible. I hope that other Egyptological researchers will follow suit and find this to be a highly appropriate means of data manipulation and storage. I am also interested in applying this technology for investigating further into methods of calculating distances to material sources, and conducting new investigations into the distribution of sources.

8.6 Concluding remarks

The analysis conducted here has proved revealing, quite often in unanticipated ways. The thesis that has resulted has raised issues and encompassed new approaches that I could never have predicted at its outset. By approaching this data from a critical socio-evolutionary angle, by taking into account the approaches of archaeologists working on

mortuary data to elucidate similar problems worldwide, and through the creation of my own analytical approach, I have been able to make a contribution to how we might consider the role of the northeast Delta sites during the transition to statehood in Egypt.

I have applied aspects of theoretical and methodological practice from both anthropology and archaeology in order to present this new approach to what is a very old problem. Even though the hindrance of incomplete datasets has been an issue of concern both to me and to a multitude of other researchers, by approaching the data systematically and comparatively I feel that it has been possible here to elucidate reasons for social transformation at this group of sites in the northeast Delta. While it is important not to assume the universality of dynamics for the rise of social complexity regardless of area, it is equally vital not to consider sites in isolation. Through the synthesis of burial trends over both periods and areas wider than my own primary focus, I have been able to utilise the data from KHD, KN, MAO and TIA to contribute towards our understanding of the dynamics driving change within social and political organisation within this region. The consideration of elements of cultural similarity and influence between the Nile Valley and the Delta, and elucidation of aspects indigenous to kin groups within these communities, has helped to clarify the degree to which the political situation in Egypt at the end of the fourth millennium served to differentially affect these communities. The four-stage analytical approach used here has allowed me to view the data from various angles. The increasing blend of information acquired following each stage has put me in a position to comment upon the changes within these communities (quite disparate communities in some respects), and make inferences into the various possible dynamics driving this change. The application of anthropological and archaeological theory has intrinsically affected the structure of the methodology, in addition to enabling so much interpretative material to be drawn from the data. It has contributed a great deal to my perception of how we might investigate the reaction of different sectors of the community to both internal and external changes affecting their day-to-day existence and functioning.

I am gratified to have the opportunity to contribute towards the rise of research within the Delta, and intend to pursue future research and fieldwork within this region. With new methods of data recording and data analysis, the opportunity is wide open for us, and

future researchers, to integrate new technology with inter-disciplinary approaches, and tackle the complexity of the Predynastic to Early Dynastic transformation in fresh and increasingly revealing ways.

References

Adams, B., 1987. *The Fort Cemetery at Hierakonpolis.* London: KPI Ltd.

Adams, B., 1988. *Predynastic Egypt.* Princes Risborough: Shire Publications Ltd.

Adams, B., 1995. *Ancient Nekhen: Garstang in the City of Hierakonpolis.* New Malden: SIA Publishing.

Adams, B., 1999. Hierakonpolis, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt*, 371-374. London: Routledge.

Adams, B., 2000. Some Problems solved in the Locality 6 Cemetery, *Nekhen News*, **12**, 4-6.

Adams, B. and K. M. Ciałowicz, 1997. *Protodynastic Egypt.* Princes Risborough: Shire Publications Ltd.

Alexander, J. A., 1984. The end of the moving frontier in the Neolithic of North-Eastern Africa, in L. Krzyżaniak and M. Kobusiewicz (eds.), *Origin and Early Development of Food-producing Cultures in North-eastern Africa*, 57-63. Poznań: Polish Academy of Sciences, Poznań Branch. Poznań Archaeological Museum.

Allen, J. P., 1995. *Genesis in Egypt: The Philosophy of Ancient Egyptian Creation Accounts.* San Antonio: Van Siclen Books.

Allen, T. G., 1974. *The Book of the Dead, or Going Forth by Day.* Illinois: University of Chicago Press.

Amélineau, E., 1899. *Les Nouvelles Fouilles d'Abydos. 1895-1896.* Paris: Ernest Leroux.

Amélineau, E., 1902. *Les Nouvelles Fouilles d'Abydos. Seconde Campagne 1896-1897.* Paris: Ernest Leroux.

Amélineau, E., 1904. *Les Nouvelles Fouilles d'Abydos. 1897-1898.* Paris: Ernest Leroux.

Amélineau, E., 1905. *Les Nouvelles Fouilles d'Abydos. 1897-1898.* Paris: Ernest Leroux.

Andres, W. and J. Wunderlich, 1992. Environmental conditions for early settlement at Minshat Abu Omar, Eastern Nile Delta, Egypt, in E. C. M. van den Brink (ed.), *The Nile Delta in Transition; 4th-3rd Millennium BC. Proceedings of the Seminar held in Cairo, 21-24 October 1990, at the Netherlands Institute of Archaeology and Arabic Studies*, 157-166. Tel Aviv: Edwin C. M. van den Brink.

Arkell, A. J., 1953. *Shaheinab.* Oxford: Oxford University Press.

Arkell, A. J., 1975. *The Prehistory of the Nile Valley.* Leiden: E J Brill.

Arkell, A. J. and P. J. Ucko, 1965. Review of Predynastic development in the Nile Valley, *Current Anthropology*, **6**, (2), 145-166.

Aston, B., J. A. Harrell and I. Shaw, 2000. Stone, in P. T. Nicholson and I. Shaw (eds.), *Ancient Egyptian Materials and Technology*, 5-77. Cambridge: Cambridge University Press.

Atzler, M., 1995. Some remarks on interrelating environmental changes and ecological, socio-economic problems in the development of the early Egyptian innundation culture, *Archéo-Nil*, **5**, 7-65.

Ayrton, E. R. and W. L. S. Loat, 1911. *Pre-dynastic Cemetery at El-Mahasna.* London: The Egypt Exploration Fund.

Badawi, A., 1978. Die Grabung der ägyptischen Alterümerverwaltung in Merimde Benisalame im Oktober/November 1976, *Mitteilungen des Deutschen Archäologischen Instituts abteillung Kairo*, **34**, 43-51.

Badawi, A., 1980. Beigabengräber aus Merimde, *Mitteilungen des Deutschen Archäologischen Instituts abteillung Kairo*, **36**, 70-76.

Baines, J., 1995. Origins of Egyptian Kingship, in D. O'Connor and D. P. Silverman (eds.), *Ancient Egyptian Kingship*, 95-156. Leiden: E. J. Brill.

Baines, J., 2000. Stone and other Materials in Ancient Egypt: Usages and Values, in C. Karhausen and T. de Putter (eds.), *Pierres Egyptiennes: chefs d'ouevre pour l'Eternite*, 29-41. Mons: Faculté Polythechnique de Mons.

Baines, J. and J. Málek, 1980. *Atlas of Ancient Egypt*. Oxford: Andromeda.

Baines, J. and N. Yoffee, 2000. Order, legitimacy, and wealth: setting the terms, in J. Richards and M. van Buren (eds.), *Order, Legitimacy and Wealth in Ancient States*, 13-17. Cambridge: Cambridge University Press.

Bakr, M. I., 1988. The New Excavations at Ezbet el-Tell, Kufur Nigm; the first Season (1984), in E. C. M. van den Brink (ed.), *The Archaeology of the Nile Delta, Egypt: Problems and Priorities. Proceedings of the Seminar held in Cairo, 19-22 October 1986, on the occasion of the fifteenth anniversary of the Netherlands Institute of Archaeology and Arabic Studies in Cairo*, 49-62. Amsterdam: Netherlands Foundation for Archaeological Research in Egypt.

Bakr, M. I., 1993. Excavations of Kufur Nigm, *Hommages à Jean Leclant*, **106/4**, 9-17.

Bakr, M. I., 2003. Excavations at Ezbet al-Tel, Kufur-Nigm: The Third and Fourth Seasons (1988 & 1990), in Z. Hawass (ed.), *Egyptology at the Dawn of the Twenty-first Century: Proceedings of the Eighth International Congress of Egyptologists, Cairo 2000*, 30-43. Cairo: American University in Cairo Press.

Bard, K. A., 1988. A Quantatitive Analysis of the Predynastic Burials in Armant Cemetery 1400-1500, *Journal of Egyptian Archaeology*, **74**, 39-55.

Bard, K. A., 1989. The Evolution of Social Complexity in Predynastic Egypt: An Analysis of the Naqada Cemeteries, *Journal of Mediterranean Archaeology*, **2**, (2), 223-248.

Bard, K. A., 1992. Towards an Interpretation of the Role of Ideology in the Evolution of Complex Society in Egypt, *Journal of Anthropological Archaeology*, **11**, 1-24.

Bard, K. A., 1994. *From Farmers to Pharaohs: Mortuary Evidence for the Rise of Complex Society in Egypt*. Sheffield: Sheffield Academic Press.

Bard, K. A., 1997. Urbanism and the Rise of Complex Society and the Early State in Egypt, in L. Manzanilla (ed.), *Emergence and Change in Early Urban Societies*, 59-79. New York: Plenum Press.

Bard, K. A., 1999. Armant, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt*, 143-145. London: Routledge.

Bard, K. A. and R. L. Carneiro, 1989. Patterns of Predynastic settlement location; social evolution; and the circumscription theory, *Cahier de Recherches de l'Institut de Papyrologie et d'Egyptologie de Lille*, **19**, 15-23.

Barocas, C., R. Fattovich and M. Tori, 1989. The Oriental Institute of Naples expedition to Petrie's South Town (Upper Egypt), 1977-1983: an interim report, in L. Krzyżaniak and M. Kobusiewicz (eds.), *Late Prehistory of the Nile Basin and the Sahara*, 295-301. Poznań: Poznań Archaeological Museum.

Baumgartel, E. J., 1947. *The Cultures of Prehistoric Egypt.* London: Oxford University Press.

Baumgartel, E. J., 1974. Predynastic Egypt, in I. E. S. Edwards, C. J. Gadd and N. G. L. Hammond (eds.), *The Cambridge Ancient History*, 463-497. Cambridge: Cambridge University Press.

Bietak, M., 1975. *Tell el-Dab'a II.* Vienna: Österreichischen Akademie der Wissenschaften.

Bietak, M., 1986. La naissance de la notion de ville dans l'Egypte Ancienne, un acte politique?, *Cahier de Recherches de l'Institut de Papyrologie et d'Egyptologie de Lille*, **8**, 29-36.

Binford, L. R., 1971. Mortuary Practices: Their Study and Their Potential, in J. A. Brown (ed.), *Approaches to the Social Dimensions of Mortuary Practices*, 6-29. Washington DC: The Society for American Archaeology.

Boehmer, R. M., G. Dreyer and B. Kromer, 1993. Einige frühzeitliche ^{14}C-Datierungen aus Abydos und Uruk, *Mitteilungen des Deutschen Archäologischen Instituts abteillung Kairo*, **49**, 63-68.

Boserup, E., 1965. *The Conditions of Agricultural Growth.* London: George Allen & Unwin Ltd.

Breasted, J. H., 1905. *A History of Egypt.* New York: Charles Scribner's Sons.

Breasted, J. H., 1931. The Predynastic Union of Egypt, *Bulletin de l'Institut Français d'Archéologie Orientale*, **30**, 709-724.

Brewer, D. J., 1989. *Fishermen, Hunters and Herders, Zooarchaeology in the Fayum (ca. 8000-5000 BP).* Oxford: BAR International Series 478.

Brothwell, D., 1981. *Digging Up Bones.* Third Edition. New York: Cornell University Press.

Brunton, G., 1932. The Predynastic Town-site at Hierakonpolis, in S. R. K. Glanville (ed.), *Studies Presented to F. L. Griffith*, 272-276. London: Egypt Exploration Society.

Brunton, G., 1937. *Mostagedda and the Tasian Culture.* London: Bernard Quaritch Ltd.

Brunton, G., 1948. *Matmar.* London: Bernard Quaritch Ltd.

Brunton, G. and G. Caton-Thompson, 1928. *The Badarian Civilization.* London: The British School of Archaeology in Egypt.

Buikstra, J. E. and D. H. Ubelaker, 1994. *Standards for Data Collection from Human Skeletal Remains. Seminar at The Field Museum of Natural History, Conference*, 9. Fayetteville: Arkansas Archaeological Survey.

Butzer, K. W., 1976. *Early Hydraulic Civilization in Egypt.* Chicago: University of Chicago Press.

Butzer, K. W., 2002. Geoarchaeological Implications of Recent Research in the Nile Delta, in E. C. M. van den Brink and T. E. Levy (eds.), *Egypt and the Levant: Interrelations from the 4th through the early 3rd millennium BCE*, 83-97. London: Leicester University Press.

Byrd, B. F. and C. M. Monahan, 1995. Death, Mortuary Ritual, and Natufian Social Structure, *Journal of Anthropological Archaeology*, **14**, 251-287.

Caneva, I., M. Frangipane and A. Palmieri, 1989. Recent Excavations at Maadi (Egypt), in L. Krzyżaniak and M. Kobusiewicz (eds.), *Late Prehistory of the Nile Basin and the Sahara*, 287-293. Poznań: Poznań Archaeological Museum.

Caneva, I., A. Palmieri and M. Frangipane, 1987. Predynastic Egypt: new data from Maadi, *African Archaeological Review*, **5**, 105-14.

Carneiro, R. L., 1970. A Theory of the Origin of the State, *Science*, **169**, 733-738.

Carneiro, R. L., 1972. From Autonomous Villages to the State, a Numerical Estimation, in B. Spooner (ed.), *Population Growth: Anthropological Implications*, 64-77. Cambridge, Massachusetts: M.I.T.

Carr, C., 1995. Mortuary Practices: Their Social, Philosophical-Religious, Circumstantial, and Physical Determinants, *Journal of Archaeological Method and Theory*, **2**, 105-200.

Castillos, J. J., 1982. *A Reappraisal of the Published Evidence on Egyptian Predynastic and Early Dynastic Cemeteries.* Toronto.

Castillos, J. J., 1997. New Data on Egyptian Predynastic Cemeteries, *Révue d'Egyptologie*, **48**, 251-256.

Castillos, J. J., 1998a. Evidence for the appearance of social stratification in Predynastic Egypt, in C. J. Eyre (ed.), *Proceedings of the Seventh International Congress of Egyptologists*, 255-259. Leuven: Peters.

Castillos, J. J., 1998b. Tomb Size Distribution in Egyptian Predynastic Cemeteries, *Discussions in Egyptology*, **40**, 1-65.

Castillos, J. J., 1998c. Inequality in Egyptian Predynastic Cemeteries, *Révue d'Egyptologie*, **49**, 25-36.

Castillos, J. J., 1998d. Wealth Evaluation of Predynastic Tombs, *Göttinger Miszellen*, **163**, 27-31.

Castillos, J. J., 2000. Social development in Predynastic Egypt: Matmar, a case study, in L. Krzyżaniak, K. Kroeper and M. Kobusiewicz (eds.), *Recent Research Into the Stone Age of Northeastern Africa*, 159-170. Poznań: Poznań Archaeological Museum.

Castillos, J. J., 2003. The Predynastic Cemeteries at Matmar, Mostagedda, and Badari, in Z. Hawass (ed.), *Egyptology at the Dawn of the Twenty-first Century: Proceedings of the Eighth International Congress of Egyptologists, Cairo 2000*, 112-116. Cairo: American University in Cairo Press.

Caton-Thompson, G. and E. W. Gardner, 1934. *The Desert Fayum.* London: Royal Anthropological Institute of Great Britain and Ireland.

Chapman, R., 1981. The emergence of formal disposal areas and the 'problem' of megalithic tombs in prehistoric Europe, in R. Chapman, I. Kinnes and K. Randsborg (eds.), *The Archaeology of Death*, 71-81. Cambridge: Cambridge University Press.

Chapman, R., 1995. Ten Years After - Megaliths, Mortuary Practices, and the Territorial Model, in L. A. Beck (ed.), *Regional Approaches to Mortuary Analysis*, 29-51. New York: Plenum Press.

Chapman, R. and K. Randsborg, 1981. Approaches to the archaeology of death, in R. Chapman, I. Kinnes and K. Randsborg (eds.), *The Archaeology of Death*, 1-24. Cambridge: Cambridge University Press.

Childe, V. G., 1952. *New Light on the Most Ancient East.* Fourth Edition. London: Routledge and Kegan Paul Ltd.

Chlodnicki, M., 1984. Pottery from the Neolithic settlement at Kadero (Central Sudan), in L. Krzyżaniak and M. Kobusiewicz (eds.), *Origin and Early Development of Food-producing Cultures in North-eastern Africa,* 337-342. Poznań: Polish Academy of Sciences, Poznań Branch. Poznań Archaeological Museum.

Chlodnicki, M., R. Fattovich and S. Salvatori, 1990. The Nile Delta in Transition: a view from Tell el-Farkha, in E. C. M. van den Brink (ed.), *The Nile Delta in Transition; 4th-3rd Millennium BC. Proceedings of the Seminar held in Cairo, 21-24 October 1990 at the Netherlands Institute of Archaeology and Arabic Studies, Conference*, 171-190. Cairo: Edwin C. M. van den Brink.

Ciałowicz, K. M., 2000. The First Kings of Egypt, in K. M. Ciałowicz and J. A. Ostrowski (eds.), *Les Civilisations du bassin Méditerranéen. Hommages à Joachim Sliwá*, 61-69. Cracow: Université Jagellonne Institut d'Archéologie.

Crubezy, E., 1992. de L'Anthropologie physique à la paléo-ethnologie funéraire et la paléo-biologie, *Archéo-Nil,* **2**, 7-19.

Crubezy, E., 1998. La nécropole d'Adaïma: une première synthèse, *Archéo-Nil,* **8**, 33-155.

Crubezy, E., 2001. Cognitive capacities, visual representations of a message and the invention of writing in Egypt, *Archéo-Nil,* **11**, 13-21.

Crumley, C. L., 1995. Heterarchy and the Analysis of Complex Societies, in R. M. Ehrenreich, C. L. Crumley and J. E. Levy (eds.), *Heterarchy and the Analysis of Complex Societies*, 1-6. Arlington: American Anthropological Association.

David, N., 1992. The Archaeology of Ideology: Mortuary Practices in the Central Mandara Highlands, Northern Cameroon, in J. A. Sterner and N. David (eds.), *An African Commitment: Papers in honour of Peter Lewis Shinnie*, 181-210. Calgary: University of Calgary Press.

Davis, W., 1992. *Masking the Blow: The Scene of Representation in Late Prehistoric Egyptian Art.* Berkeley: University of California Press.

de Morgan, H., 1912. Report on Excavations made in Upper Egypt during the Winter 1907-1908, *Annales du Service des Antiquités de l'Egypte,* **12**, 25-38.

de Morgan, H., 1984. Archaeological Researches in the Nile Valley between Esna and Gebel es-Silsila. Report on the 1907-1908 season, in W. Needler (ed.), *Predynastic and Archaic Egypt in the Brooklyn Museum*, 50-66. New York: The Brooklyn Museum.

Debono, F. and B. Mortenson, 1988. *The Predynastic Cemetery at Heliopolis.* Mainz am Rhein: Verlag Philipp von Zabern.

Debono, F. and B. Mortenson, 1990. *El Omari: a Neolithic Settlement and other Sites in the Vicinity of Wadi Hof Helwan.* Mainz am Rhein: Verlag Philipp von Zabern.

Derry, D. E., 1956. The Dynastic Race in Egypt, *Journal of Egyptian Archaeology,* **42**, 80-85.

Doran, J. E. and F. R. Hodson, 1975. *Mathematics and Computers in Archaeology.* Edinburgh: Edinburgh University Press.

Dreyer, G., 1999. Abydos, Umm el-Qa'ab, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt*, 109-114. London: Routledge.

Duncan, R. J., F. R. Hodson, C. R. Orton, P. A. Tyers and A. Vekaria, 1988. *Data analysis for archaeologists: The Institute of Archaeology programs.* Unpublished manual.

Dzierzykray-Rogalski, T., 1984. Remarks on the position of human remains in the Neolithic graves at Kadero (Central Sudan), in L. Krzyżaniak and M. Kobusiewicz (eds.), *Origin and Early Development of Food-producing cultures in North-eastern Africa*, 333-335. Poznań: Polish Academy of Sciences, Poznań Branch. Poznań Archaeological Museum.

Eigner, D., 2000. Tell Ibrahim Awad - Divine Residence from Dynasty 0 until Dynasty 11, *Ägypten und Levante*, 10, 17-36.

Eiwanger, J., 1978. Erster Vorbericht über die Wiederaufnahme der Grabungen in der neolithischen Siedlung Merimde-Benisaläme, *Mitteilungen des Deutschen Archäologischen Instituts abteillung Kairo*, 34, 33-42.

Eiwanger, J., 1979a. Geschoßspitzen aus Merimde, *Jahrbuch des römisch-germanische Zentralmuseeun, Mainz*, 26, 61-74.

Eiwanger, J., 1979b. Zweiter Vorbericht über die Wiederaufnahme der Grabungen in der neolithischen Siedlung Merimde-Benisaläme, *Mitteilungen des Deutschen Archäologischen Instituts abteillung Kairo*, 35, 23-57.

Eiwanger, J., 1980. Dritter Vorbericht über die Wiederaufnahme der Grabungen in der neolithischen Siedlung Merimde-Benisaläme, *Mitteilungen des Deutschen Archäologischen Instituts abteillung Kairo*, 36, 61-76.

Eiwanger, J., 1982. Die neolithische Siedlung von Merimde-Benisaläme, *Mitteilungen des Deutschen Archäologischen Instituts abteillung Kairo*, 38, 67-82.

Eiwanger, J., 1984. *Merimde-Benisaläme I: Die Funde der Urschicht.* Mainz am Rhein: Verlag Philipp von Zabern.

Eiwanger, J., 1988. *Merimde-Benisaläme II: Die Funde der mittleren Merimdekultur.* Mainz am Rhein: Verlag Philipp von Zabern.

Eiwanger, J., 1992. *Merimde-Benisaläme III: Die Funde der jüngeren Merimdekultur.* Mainz am Rhein: Verlag Philipp von Zabern.

Eiwanger, J., 1999. Merimde Beni-Salame, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt*, 501-504. London: Routledge.

el-Hangary, M. S., 1992. The Excavations of the Egyptian Antiquities Organization at Ezbet Hassan Dawud (Wadi Tumilat), Season 1990, in E. C. M. van den Brink (ed.), *The Nile Delta in Transition; 4th-3rd Millennium BC. Proceedings of the Seminar held in Cairo, 21-24 October 1990, at the Netherlands Institute of Archaeology and Arabic Studies*, 215-216. Tel Aviv: Edwin C. M. van den Brink.

Ellis, C. J., 1992. A statistical analysis of Protodynastic burials in the 'Valley' Cemetery of Kafr Tarkhan, in E. C. M. van den Brink (ed.), *The Nile Delta in Transition; 4th-3rd Millennium BC. Proceedings of the Seminar held in Cairo, 21-24 October 1990, at the Netherlands Institute of Archaeology and Arabic Studies*, 241-258. Tel Aviv: Edwin C. M. van den Brink.

Ellis, C. J., 1996. Expressions of Social Status: a statistical approach to the Late Predynastic/Early Dynastic cemeteries of Kafr Tarkhan, in L. Krzyżaniak, K. Kroeper and M. Kobusiewicz (eds.), *Interregional Contacts in the Later Prehistory of Northeastern Africa*, 151-164. Poznań: Poznań Archaeological Museum.

Ellis, C. J., 1999. Kafr Tarkhan (Kafr Ammar), in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt*, 389-390. London: Routledge.

el-Sanussi, A. and M. Jones, 1997. A Site of the Maadi Culture near the Giza Pyramids, *Mitteilungen des Deutschen Archäologischen Instituts abteillung Kairo,* **53**, 241-253.

Emery, W. B., 1961. *Archaic Egypt.* London: Pelican Books.

Endesfelder, E., 1984. Social and Economic development towards the end of the Predynastic Period in Egypt, in L. Krzyżaniak and M. Kobusiewicz (eds.), *Origin and Early Development of Food-Producing Cultures in North-Eastern Africa*, 95-100. Poznań: Polish Academy of Sciences, Poznań Branch. Poznań Archaeological Museum.

Engelbach, R., 1923. *Harageh.* London: British School of Archaeology in Egypt.

Engelbach, R., 1943. An Essay on the Advent of the Dynastic Race in Egypt and its Consequences, *Annales du Service des Antiquités de l'Egypte,* **42**, 193-221.

Fairservis, W. A. J., M. A. Hoffman and K. R. Weeks, 1971-1972. Preliminary Report on the First Two Seasons at Hierakonpolis, *Journal of the American Research Center in Egypt,* **9**, 7-68.

Faltings, D., 2002. The Chronological Frame and Social Structure of Buto in the Fourth Millennium BCE, in E. C. M. van den Brink and T. E. Levy (eds.), *Egypt and the Levant: Interrelations from the 4th through the early 3rd millennium BCE*, 165-179. London: Leicester University Press.

Fattovich, R., 1979. Trends in the Study of Predynastic Social Structures, in W. F. Reineke (ed.) *First International Congress of Egyptology, Cairo, October 2-10, 1976, Conference*, 215-220. Cairo: Akademic-Verlag.

Fattovich, R., 1999. Tell el-Farkha, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt*, 782-783. London: Routledge.

Fried, M. H., 1967. *The Evolution of Political Society.* New York: Random House.

Friedman, R. F., 1996. Hierakonpolis (Egypt), in T. Ring (ed.), *International Dictionary of Historic Places*, 344-349. Chicago: Dearborn.

Friedman, R. F., 1999. Preliminary Report on Field Work at Hierakonpolis: 1996-1998, *Journal of the American Research Center in Egypt,* **36**, 1-35.

Gale, N. H. and Z. A. Stos-Gale, 1981. Ancient Egyptian Silver, *Journal of Egyptian Archaeology,* **67**, 103-115.

Garstang, J., 1907. Excavations at Hierakonpolis, at Esna, and in Nubia, *Annales du Service des Antiquités de l'Egypte,* **8**, 132-148.

Gautier, A., 1989. A General Review of the known Prehistoric faunas of the Central Sudanese Nile Valley, in L. Krzyżaniak and M. Kobusiewicz (eds.), *Late Prehistory of the Nile Basin and the Sahara*, 353-357. Poznań: Poznań Archaeological Museum.

Geller, J., 1992. From Prehistory to History: Beer in Egypt, in R. F. Friedman and B. Adams (eds.), *The Followers of Horus. Studies dedicated to Michael A. Hoffman*, 19-26. Oxford: Egyptian Studies Association Publication.

Geus, F., 1986. La section française de la direction des antiquités du Soudan: travaus de terrain et de laboratoire en 1982-1983, *Archéologie eu Nil Moyen,* **1**, 13-41.

Ginter, B. and J. Kozlowski, 1979. Excavation report on the prehistoric and Predynastic settlement in el-Tarif during 1978., *Mitteilungen des Deutschen Archäologischen Instituts abteillung Kairo,* **35**, 87-102.

Goedicke, H., 1994. Water and Tax, in B. Menu (ed.), *Les problèmes institutionnels de l'eau en Égypte ancienne et dans l'Antiquité Méditerranéenne*, 187-194. Cairo: Institut Français d'Archéologie Orientale.

Goldstein, L., 1981. One-dimensional archaeology and multi-dimensional people: spatial organisation and mortuary analysis, in R. Chapman, I. Kinnes and K. Randsborg (eds.), *The Archaeology of Death*, 53-71. Cambridge: Cambridge University Press.

Görsdorf, J., G. Dreyer and U. Hartung, 1998. ^{14}C Dating Results of the Archaic Royal Necropolis Umm el-Qaab at Abydos, *Mitteilungen des Deutschen Archäologischen Instituts abteillung Kairo*, **54**, 169-175.

Griswold, W. A., 1992. Measuring Social Inequality at Armant, in R. F. Friedman and B. Adams (eds.), *The Followers of Horus. Studies dedicated to Michael A. Hoffman*, 193-198. Oxford: Oxbow Books.

Guksch, C. E., 1991. Ethnological models and processes of state formation - chiefdom survivals in the Old Kingdom, *Göttinger Miszellen*, **125**, 37-50.

Guksch, C. E., 1992. On Ethnographic Analogies, in R. F. Friedman and B. Adams (eds.), *The Followers of Horus. Studies dedicated to Michael A. Hoffman*, 7-10. Oxford: Egyptian Studies Association Publication.

Håland, R., 1986. Problems in the Mesolithic and Neolithic Culture-History in the Central Nile Valley, in T. Hägg (ed.), *Nubian Culture Past and Present: Main Papers Presented at the Sixth International Conference for Nubian Studies in Uppsala, 11-16 August, 1986, Conference*, 47-74. Uppsala: Kungl. Vitterhets Historie och Antikvitets Akademien.

Harrell, J. A., 1990. The Misuse of the term "alabaster" in Egyptology, *Göttinger Miszellen*, **119**, 37-42.

Hassan, A. A. and F. A. Hassan, 1981. Source of Galena in Predynastic Egypt at Naqada, *Archaeometry*, **23**, (1), 77-82.

Hassan, F. A., 1980. Prehistoric settlements along the Main Nile, in M. A. J. Williams and H. Faure (ed.), *The Sahara and the Nile: Quaternary environments and prehistoric occupation in northern Africa*, 421-450. Rotterdam: A. A. Balkema.

Hassan, F. A., 1981. *Demographic Archaeology*. New York: Academic Press.

Hassan, F. A., 1985. Radiocarbon Chronology of Neolithic and Predynastic sites in Upper Egypt and the Delta, *The African Archaeological Review*, **3**, 95-116.

Hassan, F. A., 1986a. Chronology of the Khartoum 'Mesolithic and Neolithic' and related sites in the Sudan: statistical analysis and comparisons with Egypt, *African Archaeological Review*, **3**, 95-116.

Hassan, F. A., 1986b. Desert Environment and Origins of Agriculture in Egypt, *Norwegian Archaeological Review*, **19**, (2), 63-76.

Hassan, F. A., 1988. The Predynastic of Egypt, *Journal of World Prehistory*, **2**, 135-185.

Hassan, F. A., 1997a. The dynamics of a riverine civilization: a geoarchaeological perspective on the Nile Valley, Egypt, *World Archaeology*, **29**, (1), 51-74.

Hassan, F. A., 1997b. Egypt: Emergence of State Society, in J. O. Vogel (ed.), *Encyclopedia of Precolonial Africa: Archaeology, History, Languages, Cultures, and Environments*, 472-479. Walnut Creek: AltaMira Press.

Hassan, F. A., 1998. The Earliest Goddesses of Egypt: Divine Mothers and Cosmic Bodies, in L. Goodison and C. Morris (eds.), *Ancient Goddesses*, 98-112. London: British Museum Press.

Hassan, F. A., 1999. Nagada, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt*, 555-557. London: Routledge.

Hassan, F. A., 2000a. Kafr Hassan Dawood, *Egyptian Archaeology*, **16**, 37-39.

Hassan, F. A., 2000b. Environmental Perception and Human Responses in History and Prehistory, in R. J. McIntosh, J. A. Tainter and S. K. McIntosh (eds.), *The Way the Wind Blows: Climate, History, and Human Action*, 121-140. New York: Columbia University Press.

Hassan, F. A., 2002a. Introduction, in F. A. Hassan (ed.), *Droughts, Food and Culture*, 11-26. New York: Kluwer Academic/Plenum Publishers.

Hassan, F. A., 2002b. Ecological Changes and Food Security in the Later Prehistory of North Africa: Looking Forward, in F. A. Hassan (ed.), *Droughts, Food and Culture*, 321-333. New York: Kluwer Academic/Plenum Publishers.

Hassan, F. A., in preparation. Grave Goods and Sociopolitical Change in Predynastic Egypt.

Hassan, F. A. and A. Jiménez-Serrano, unpublished. The Chronology of the Late Predynastic and the First Dynasty.

Hassan, F. A. and S. J. Smith, 2002. Soul Birds and Heavenly Cows: Transforming Gender in Predynastic Egypt, in S. Milledge Nelson and M. Rosen-Ayalon (eds.), *In Pursuit of Gender: Worldwide Archaeological Approaches*, 43-65. Oxford: AltaMira.

Hassan, F. A., G. J. Tassie, T. L. Tucker, J. M. Rowland and J. F. L. van Wetering, in press. Social Dynamics at the Late Predynastic to Early Dynastic Site of Kafr Hassan Dawood, East Delta, Egypt, *Archéo-Nil*, **12**.

Helck, W., 1987. *Untersuchungen zur Thinitenzeit*. Wiesbaden: Otto Harrassowitz.

Hendrickx, S., 1984. The Late Predynastic cemetery at Elkab (Upper Egypt), in L. Krzyżaniak and M. Kobusiewicz (eds.), *Origin and Early Development of Food-producing Cultures in North-eastern Africa*, 225-230. Poznań: Polish Academy of Sciences, Poznań Branch. Poznań Archaeological Museum.

Hendrickx, S., 1989. *De grafvelden der Naqada-cultuur in Zuid-Egypte, met bijzondere aandacht voor het Naqada III grafveld te Elkab. Intere chronologie en sociale differentiatie.* Unpublished PhD thesis, Leuven University.

Hendrickx, S., 1994. *Elkab V. The Naqada III Cemetery.* Brussels: Comité des Fouilles belges en Égypte et Musées Royaux d'Art et d'Histoire.

Hendrickx, S., 1996. The Relative Chronology of the Naqada Culture: Problems and Possibilities, in A. J. Spencer (ed.), *Aspects of Early Egypt*, 36-69. London: British Museum Press.

Hendrickx, S., 1999a. La chronologie de la préhistoire tardive et des débuts de l'histoire de l'Egypte, *Archéo-Nil*, **9**, 13-81.

Hendrickx, S., 1999b. Elkab, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt*, 289-293. London: Routledge.

Hendrickx, S., D. Faltings, L. Op de Beeck, D. Raue and C. Michiels, 2002. Milk, Beer and Bread Technology during the Early Dynastic Period, *Mitteilungen des Deutschen Archäologischen Instituts abteillung Kairo*, **58**, 277-304.

Hendrickx, S. and E. C. M. van den Brink, 2002. Inventory of Predynastic and Early Dynastic Cemetery and Settlement Sites in the Egyptian Nile Valley, in E. C. M. van den Brink and T. E. Levy (eds.), *Egypt and the Levant: Interrelations from the 4th through the early 3rd millennium BCE*, 346-399. London: Leicester University Press.

Hodson, F. R., 1977. Quantifying Hallstatt: Some Initial Results, *American Antiquity*, **42**, (3), 394-412.

Hoffman, M. A., 1976. The City of the Hawk: Seat of Egypt's Ancient Civilization, *Expedition*, **18**, (3), 32-41.

Hoffman, M. A., 1980a. *Egypt Before the Pharaohs*. ARK Edition 1984. New York: Dorset Press.

Hoffman, M. A., 1980b. New Excavations at Hierakonpolis: A Multidisciplinary Approach to the Origins of the Egyptian State, *Anthropology*, **4**, 51-70.

Hoffman, M. A., 1980c. Ghosts in the Sand, *Arts in Virginia*, **21**, 2-17.

Hoffman, M. A., 1980d. A Rectangular Amratian House from Hierakonpolis and its Significance for Predynastic Research, *Journal of Near Eastern Studies*, **39**, 119-137.

Hoffman, M. A., 1982a. *The Predynastic at Hierakonpolis: An Intermin Monograph*. Giza/Macomb: Cairo University Herbarium/Western Illinois University Department of Sociology and Anthropology.

Hoffman, M. A., 1982b. A Preliminary Report on the 1982 Season at Hierakonpolis, *Newsletter of the American Research Center in Egypt*, **119**, 14-21.

Hoffman, M. A., 1983. Where Nations Began, *Science*, **83**, (4), 42-51.

Hoffman, M. A., 1989. Packaged Funerals and the Rise of Egypt, *Archaeology*, **42**, (2), 48-51.

Holladay, J. S., 1982. *Cities of the Delta, Part III. Tell el-Maskhuta, preliminary report on the Wadi Tumilat project 1978-1979*. Malibu: American Research Center in Egypt/Undena Publications.

Holmes, D. L., 1989. *The Predynastic Lithic Industries of Upper Egypt: A comparative study of the lithic traditions of Badari, Nagada and Hierakonpolis*. Oxford: BAR International Series 469.

Holmes, D. L., 1999. el-Badari district Predynastic sites, in K. A. Bard (ed.), *The Encyclopedia of the Archaeology of Ancient Egypt*, 161-164. London: Routledge.

Holmes, D. L. and R. F. Friedman, 1994. Survey and Test Excavations in the Badari Region, Egypt, *Proceedings of the Prehistoric Society*, **60**, 105-142.

Janssen, R. M. and J. J. Janssen, 1996. *Getting Old in Ancient Egypt*. London: The Rubicon Press.

Jeffreys, D., 1999. Helwan, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt*, 367-368. London: Routledge.

Joffe, A. H., 1998. Alcohol and Social Complexity in Ancient Western Asia, *Current Anthropology*, **39**, (3), 297-322.

Johnson, A. W. and T. Earle, 2000. *The Evolution of Human Societies*. Stanford: Stanford University Press.

Junker, H., 1912. *Bericht über die Grabungen der Kaiserlichen Akademie der Wissenschaften in Wien auf dem Friedhof in Turah, Winter 1909-1910.* Vienna: Denkschriften der Kaiserlichen Akademie der Wissenschaften in Wien, Philosophisch-historische Klasse.

Junker, H., 1929. Vorläufer Bericht über die Grabung der Akademie der Wissenschaften in Wien auf der neolithischen Siedlung von Merimde Benisalame (Westdelta), *Anzeiger der Akademie der Wissenschaften in Wien, Philosophischhistorische Klasse,* **1929**, (XVI-XVIII), 156-250.

Junker, H., 1930. Vorläufer Bericht über die Grabung der Akademie der Wissenschaften in Wien auf der neolithischen Siedlung von Merimde Benisalame (Westdelta), *Anzeiger der Akademie der Wissenschaften in Wien, Philosophischhistorische Klasse,* **1930**, (V-XIII), 21-83.

Junker, H., 1932. Vorläufer Bericht über die Grabung der Akademie der Wissenschaften in Wien auf der neolithischen Siedlung von Merimde Benisalame (Westdelta), *Anzeiger der Akademie der Wissenschaften in Wien, Philosophischhistorische Klasse,* **1932**, (I-IV), 36-97.

Junker, H., 1933. Vorläufer Bericht über die Grabung der Akademie der Wissenschaften in Wien auf der neolithischen Siedlung von Merimde Benisalame (Westdelta), *Anzeiger der Akademie der Wissenschaften in Wien, Philosophischhistorische Klasse,* **1933**, (XVI-XXVII), 54-97.

Junker, H., 1934. Vorläufer Bericht über die Grabung der Akademie der Wissenschaften in Wien auf der neolithischen Siedlung von Merimde Benisalame (Westdelta), *Anzeiger der Akademie der Wissenschaften in Wien, Philosophischhistorische Klasse,* **1934**, (X), 118-132.

Junker, H., 1940. Vorläufer Bericht über die Grabung der Akademie der Wissenschaften in Wien auf der neolithischen Siedlung von Merimde Benisalame (Westdelta), *Anzeiger der Akademie der Wissenschaften in Wien, Philosophischhistorische Klasse,* **1940**, (I-IV), 3-25.

Kaiser, W., 1956. Stand und Probleme der ägyptischen Vorgeschichtsforschung, *Zeitschrift für Ägyptische Sprache und Altertumskunde,* **81**, 87-109.

Kaiser, W., 1957. Zur inneren Chronologie der Naqadakultur, *Archaeologia geographica,* **6**, 69-77.

Kaiser, W., 1958. Zur vorgeschichtlichen Bedeutung von Hierakonpolis, *Mitteilungen des Deutschen Archäologischen Instituts abteillung Kairo,* **16**, 183-192.

Kaiser, W., 1959. Einige Bermerkungen zur ägyptischen Frühzeit I, *Zeitschrift für Ägyptische Sprache und Altertumskunde,* **84**, 119-132.

Kaiser, W., 1961. Einige Bemerkungen zur ägyptischen Frühzeit II, *Zeitschrift für Ägyptische Sprache und Altertumskunde,* **86**, 39-61.

Kaiser, W., 1964. Einige Bemerkungen zur ägyptischen Frühzeit III, *Zeitschrift für Ägyptische Sprache und Altertumskunde,* **91**, 86-125.

Kaiser, W., 1985. Zur Sudausdehnung der vorgeschichtlichen Deltakulturen und zur frühen Entwicklung Oberagyptens, *Mitteilungen des Deutschen Archäologischen Instituts abteillung Kairo,* **41**, 61-87.

Kaiser, W., 1990. Zur Entstehunge das gesamtägyptischen Staates, *Mitteilungen des Deutschen Archäologischen Instituts abteillung Kairo,* **46**, 287-299.

Kaiser, W. and G. Dreyer, 1982. Umm el-Qaab. Nachuntersuchungen im frühzeitlichen Königsfriedhof, *Mitteilungen des Deutschen Archäologischen Instituts abteillung Kairo,* **38**, 211-269.

Kaiser, W. and A. Zaugg, 1988. Zum Fundplatz der Maadikultur bei Tura, *Mitteilungen des Deutschen Archäologischen Instituts abteillung Kairo,* **44**, 121-124.

Kantor, H. J., 1944. The Final Phase of Predynastic Culture: Gerzean or Semainean?, *Journal of Near Eastern Studies,* **3**, 110-136.

Kemp, B. J., 1967. The Egyptian 1st Dynasty royal cemetery, *Antiquity,* **41**, 22-32.

Kemp, B. J., 1982. Automatic analysis of Predynastic cemeteries: A new method for an old problem, *Journal of Egyptian Archaeology,* **68**, 5-15.

Kemp, B. J., 1989. *Ancient Egypt: Anatomy of a Civilization.* London: Routledge.

Klemm, R. and D. D. Klemm, 1979. Herkunftbestimmung altägyptischen steinmaterials, *Studien zur Altägyptischen Kultur,* **7**, 103-140.

Klemm, R. and D. D. Klemm, 1991. Calcit-Alabaster oder Travertin? Bermerkungen zu Sinn und Unsinn petrographischer Bezeichnungen in der Ägyptologie, *Göttinger Miszellen,* **122**, 57-70.

Klemm, R. and D. D. Klemm, 1993. *Steine und Steinbrüche im Alten Ägypten.* Berlin: Springer Verlag.

Klichowska, M., 1984. Plants of the Neolithic Kadero (Central Sudan): a palaeoethnobotanical study of the plant impressions on pottery, in L. Krzyżaniak and M. Kobusiewicz (eds.), *Origin and Early Development of Food-producing cultures in North-eastern Africa,* 321-326. Poznań: Polish Academy of Sciences, Poznań Branch. Poznań Archaeological Museum.

Köhler, E. C., 1992. The Pre- and Early Dynastic pottery of Tell el-Fara'in (Buto), in E. C. M. van den Brink (ed.), *The Nile Delta in Transition; 4th-3rd Millennium BC. Proceedings of the Seminar held in Cairo, 21-24 October 1990, at the Netherlands Institute of Archaeology and Arabic Studies*, 11-22. Tel Aviv: Edwin C. M. van den Brink.

Köhler, E. C., 1995. The State of Research on Late Predynastic Egypt: New Evidence for the Development of the Pharaonic State, *Göttinger Miszellen,* **147**, 79-92.

Köhler, E. C., 1996. Evidence for interregional contacts between late Prehistoric Lower and Upper Egypt: a view from Buto, in L. Krzyżaniak, K. Kroeper and M. Kobusiewicz (eds.), *Interregional Contacts in the Later Prehistory of Northeastern Africa*, 215-225. Poznań: Poznań Archaeological Museum.

Kozlowski, J., 1999. Thebes, el-Tarif, prehistoric sites, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt*, 824-826. London: Routledge.

Kroeper, K., 1984. Minshat Abu Omar (Munich East Delta Expedition), *Bulletin de liaison du Groupe International d'Étude de la Céramique Égyptienne,* **9**, 6-10.

Kroeper, K., 1985. Some stone vessels from Minshat Abu Omar - Eastern Delta, *Varia Aegyptiaca,* **1**, 51-57.

Kroeper, K., 1987. The ceramic of the Pre/Early Dynastic cemetery of Minshat Abu Omar, *Bulletin of the Egyptological Seminar,* **8**, (1986/7), 73-94.

Kroeper, K., 1988. The Excavations of the Munich East-Delta Expedition in Minshat Abu Omar, in E. C. M. van den Brink (ed.), *The Archaeology of the Nile Delta, Egypt: Problems and Priorities. Proceedings of the Seminar held in Cairo, 19-22 October 1986, on the occasion of the fifteenth anniversary of the Netherlands Institute of Archaeology and Arabic Studies in Cairo,* 11-46. Amsterdam: Netherlands Foundation for Archaeological Research in Egypt.

Kroeper, K., 1989. Palestinian Ceramic Imports in Pre- and Protohistoric Egypt, in D. de Miroschedji (ed.), *L'Urbanisation de la Palestine a l'age du Bronze ancien*, 407-422. Oxford: BAR International Series 527.

Kroeper, K., 1992. Tombs of the elite in Minshat Abu Omar, in E. C. M. van den Brink (ed.), *The Nile Delta in Transition; 4th-3rd Millennium BC. Proceedings of the Seminar held in Cairo, 21-24 October 1990, at the Netherlands Institute of Archaeology and Arabic Studies*, 127-150. Tel Aviv: Edwin C. M. van den Brink.

Kroeper, K., 1994. Minshat Abu Omar. Pot burials occurring in the Dynastic Cemetery, *Bulletin de liaison du Groupe International d'Étude de la Céramique Égyptienne*, **18**, 19-32.

Kroeper, K., 1996. Minshat Abu Omar. Burials with palettes, in A. J. Spencer (ed.), *Aspects of Early Egypt*, 70-92. London: British Museum Press.

Kroeper, K., 1999. Minshat Abu Omar, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt*, 529-31. London: Routledge.

Kroeper, K., 2000. Corpus of potmarks from the Pre/Early Dynastic cemetery at Minshat Abu Omar (Northeastern Delta, Egypt), in L. Krzyżaniak, K. Kroeper and M. Kobusiewicz (eds.), *Recent Research into the Stone Age of Northeastern Africa*, 187-218. Poznań: Poznań Archaeological Museum.

Kroeper, K. and L. Krzyżaniak, 1992. Two ivory boxes from Early Dynastic graves in Minshat Abu Omar, in R. F. Friedman and B. Adams (eds.), *The Followers of Horus. Studies dedicated to Michael A. Hoffman*, 207-214. Oxford: Egyptian Studies Association Publication.

Kroeper, K. and D. Wildung, 1985. *Minshat Abu Omar, Münchner Ostdelta Expedition: Vorbericht 1978-1984.* Munich: Staatliche Sammlung Ägyptischen Kunst.

Kroeper, K. and D. Wildung, 1994. *Minshat Abu Omar - Ein vor- und frühgeschichtlicher Friedhof im Nildelta I.* Mainz am Rhein: Verlag Philipp von Zabern.

Kroeper, K. and D. Wildung, 2000. *Minshat Abu Omar - Ein vor- und frühgeschichtlicher Friedhof im Nildelta II.* Mainz am Rhein: Verlag Philipp von Zabern.

Krzyżaniak, L., 1984. The Neolithic habitation at Kadero (Central Sudan), in L. Krzyżaniak and M. Kobusiewicz (eds.), *Origin and Early Development of Food-producing Cultures in North-eastern Africa*, 309-315. Poznań: Polish Academy of Sciences. Poznań Archaeological Museum.

Krzyżaniak, L., 1989. Recent archaeological evidence on the earliest settlement in the eastern Nile Delta, in L. Krzyżaniak and M. Kobusiewicz (eds.), *Late Prehistory of the Nile Basin and the Sahara*, 267-285. Poznań: Poznań Archaeological Museum.

Lansing, A., 1935. The Museum's Excavations at Hierakonpolis, *Bulletin of the Metropolitan Museum of Art*, **30**, (2), 37-45.

Larsen, H., 1962. Die Merimdekeramik im Mittelmeersmuseum Stockholms, *Orientalia Suecana*, **11**, 4-89.

Leclant, J., 1980. Fouilles et travaux en Égypte et au Soudan, 1978-1979, *Orientalia*, **49**, 356-357.

Leclant, J., 1983. Fouilles et travaux en Égypte et au Soudan, 1981-1982, *Orientalia*, **52**, 472-473.

Leclant, J. and G. Clerc, 1985. Fouilles et travaux en Égypte et au Soudan, 1983-1984, *Orientalia*, **54**, 344-345, 348-349.

Lecointe, Y., 1987. Le site néolithique d'El Ghaba: deux années d'activité (1985-1986), *Archéologie eu Nil Moyen*, **2**, 69-87.

Levy, T. E. and E. C. M. van den Brink, 2002. Interaction Models, Egypt and the Levantine Periphery, in E. C. M. van den Brink and T. E. Levy (eds.), *Egypt and the Levant: Interrelations from the 4th through the early 3rd millennium BCE*, 3-38. London: Leicester University Press.

Lortet, L. C. and C. Gaillard, 1909. *La faune momifiée de l'ancienne Egypte et recherches anthropologiques: IIIe série*. Lyon: Muséum d'Histoire Naturelle de Lyon.

Lucas, A. and J. R. Harris, 1962. *Ancient Egyptian Materials and Industries*. London: E. Arnold.

Lythgoe, A. M., 1965. *The Predynastic Cemetery N7000. Naga-ed-Dêr, Part IV*. Berkeley: University of California Press.

MacDonald, D. H., 2001. Grief and Burial in the American Southwest: The role of evolutionary theory in the interpretation of mortuary remains, *American Antiquity*, **66**, (4), 704-14.

MacDonald, K. C., 1998. Before the Empire of Ghana: Pastoralism and the origins of cultural complexity in the Sahel, in G. Connah (ed.), *Transformations in Africa: Essays on Africa's later past*, 71-103. London: Leicester University Press.

Mace, A. C., 1909. *The Early Dynastic Cemeteries of Naga-ed-Dêr 2*. Leipzig: J. C. Hinrichs.

Maish, A. J. and R. F. Friedman, 1999. Pondering Paddy: Unwrapping the Mysteries of HK43, *Nekhen News*, **11**, (Fall 1999), 6-7.

Mallory-Greenough, L. M., 2002. The Geographical, Spatial, and Temporal Distribution of Predynastic and First Dynasty Basalt Vessels, *Journal of Egyptian Archaeology*, **88**, 67-93.

Mark, S., 1997. *From Egypt to Mesopotamia*. London: Gerald Duckworth & Co Ltd.

McGovern, P. E., U. Hartung, V. R. Badler, D. L. Glusker and L. J. Exner, 1997. The Beginnings of Winemaking and Viniculture in the Ancient Near East and Egypt, *Expedition*, **39**, (1), 3-21.

McGuire, R. H., 1983. Breaking Down Cultural Complexity: Inequality and Heterogeneity, in M. B. Schiffer (ed.), *Advances in Archaeological Method and Theory*, **6**, 91-142. New York: Academic Press.

McIntosh, R. J., 1998. *The Peoples of the Middle Niger*. Oxford: Blackwell Publishers Ltd.

McIntosh, R. J., 1999. Western representations of urbanism and invisible African towns, in S. K. McIntosh (ed.), *Beyond Chiefdoms: Pathways to Complexity in Africa*, 56-65. Cambridge: Cambridge University Press.

McIntosh, S. K., (ed.), 1999. *Beyond Chiefdoms: Pathways to Complexity in Africa*. Cambridge: Cambridge University Press.

Mengin, O. and M. Amer, 1932. *The Excavations of the Egyptian University in the Neolithic Site at Maadi, First Preliminary Report (Season 1930-31)*. Cairo: Misr-Sokkar Press.

Meskell, L., 1999. *Archaeologies of Social Life*. Oxford: Blackwell Publishers Ltd.

Meskell, L., 2000. Cycles of life and death: narrative homology and archaeological realities, *World Archaeology*, **31**, (3), 324-441.

Midant-Reynes, B., 1999. el-Adaïma, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt*, 114-115. London: Routledge.

Midant-Reynes, B., 2000. *The Prehistory of Egypt*. Oxford: Blackwell Publishers Ltd.

Miles, A. E. W., 1963. The dentition in the assessment of individual age in skeletal material, *Dental Anthropology,* 191-209.

Millet, N. B., 1990. The Narmer macehead and related objects, *Journal of the American Research Center in Egypt,* **27**, 53-59.

Mizoguchi, K., 1992. A historiography of a linear barrow cemetery: a structurationists's point of view, *Archaeological Review from Cambridge,* **11**, 39-49.

Mohammed-Ali, A. S. A., 1982. *The Neolithic Period in the Sudan: 6000-2500 B.C.* Oxford: BAR International Series 139.

Mohammed-Ali, A. S. A., 1986. The Neolithic of Eastern Sudan and its Implications for the Central Nile, in T. Hägg (ed.), *Nubian Culture Past and Present: Main Papers Presented at the Sixth International Conference for Nubian Studies in Uppsala, 11-16 August, 1986,* 75-86. Uppsala: Kungl. Vitterhets Historie och Antikvitets Akademien.

Mohammed-Ali, A. S. A. and A. E. Marks, 1984. The Prehistory of Shaqadud in the Western Butana, Central Sudan: A Preliminary Report, *Norwegian Archaeological Review,* **17**, 52-59.

Möllers, G. and A. Scharff, 1926. *Die archaeologischen Ergebnisse des vorgeschichtlichen Gräberfeldes von Abusir el-Meleq.* Leipzig: J. C. Hinrichs.

Mond, R. and O. H. Myers, 1937. *The Cemeteries at Armant I.* London: Egypt Exploration Society.

Mortenson, B., 1991. Change in the settlement pattern and population in the beginning of the historical period, *Ägypten und Levante,* **2**, 11-37.

Mortenson, B., 1999a. el-Omari, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt,* 592-594. London: Routledge.

Mortenson, B., 1999b. Tura, Predynastic cemeteries, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt,* 851-852. London: Routledge.

Mortenson, B., 1999c. Heliopolis, the Predynastic cemetery, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt,* 366-367. London: Routledge.

Murray, M. A., 1956. Burial customs and beliefs in the hereafter in Predynastic Egypt, *Journal of Egyptian Archaeology,* **42**, 86-96.

Naville, É., 1914. *Cemeteries of Abydos 1.* London: Egypt Exploration Fund.

Needler, W., 1980. Two Important Predynastic Graves from Henri de Morgan's Excavations, *Bulletin de l'Association Internationale pour l'Etude de la Préhistoire Egyptienne,* **1**, 1-15.

Needler, W., 1984. *Predynastic and Archaic Egypt in The Brooklyn Museum.* New York: The Brooklyn Museum.

Nibbi, A., 1979. The "Trees and Towns" Palette, *Annales du Service des Antiquités de l'Egypte,* **63**, 143-154.

Nicholson, P. T. and I. Shaw, (eds.) 2000. *Ancient Egyptian Materials and Technology.* Cambridge: Cambridge University Press.

Nordström, H.-A., 1996. The Nubian A-Group: ranking funerary remains, *Norwegian Archaeological Review,* **29**, (1), 17-39.

Nowakowski, J., 1984. The typology of lithic implements from the Neolithic settlement at Kadero (Central Sudan), in L. Krzyżaniak and M. Kobusiewicz (eds.), *Origin and Early Development of Food-producing Cultures in North-eastern Africa,* 343-351. Poznań: Polish Academy of Sciences, Poznań Branch. Poznań Archaeological Museum.

O'Connor, D., 1999. Abydos, Early Dynastic funerary enclosures, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt,* 93-95. London: Routledge.

Ogden, J., 2000. Metals, in P. T. Nicholson and I. Shaw (eds.), *Ancient Egyptian Materials and Technology,* 148-176. Cambridge: Cambridge University Press.

Orton, C. R. and F. R. Hodson, 1981. Rank and Class: interpreting the evidence from prehistoric cemeteries, in S. C. Humphreys and H. King (eds.), *Mortality and Immortality: the anthropology and archaeology of death, Conference,* 103-115. London: Academic Press.

O'Shea, J. M., 1981. Social configurations and the archaeological study of mortuary practices: a case study, in R. Chapman, I. Kinnes and K. Randsborg (eds.), *The Archaeology of Death,* 39-52. Cambridge: Cambridge University Press.

Otto, K. H., 1963. Shaqadud, a New Khartoum Neolithic Site Outside the Nile Valley, *Kush,* **11**, 108-116.

Pardey, E., 2001. Provincial Administration, in D. B. Redford (ed.), *The Oxford Encyclopedia of Ancient Egypt,* 16-20. Oxford: Oxford University Press.

Parker Pearson, M., 1998. Performance as valuation: early Bronze Age burial as theatrical complexity, in D. Bailey (ed.), *The Archaeology of Value: Essays on prestige and the processes of valuation,* 32-41. Oxford: BAR International Series 730.

Parker Pearson, M., 1999. *The Archaeology of Death and Burial.* Stroud: Sutton Publishing.

Passarge, S., 1940. Die Urlandschaft Ägyptens und die Lokalisierung der Wiege der altägyptischen Kultur, *Nova Acta Leopoldina,* **9**, 77-152.

Paynter, R., 1989. The archaeology of equality and inequality, *Annual Review of Anthropology,* **18**, 369-99.

Peebles, C. S. and S. M. Kus, 1977. Some Archaeological Correlates of Ranked Societies, *American Antiquity,* **42**, 421-448.

Peet, T. E., 1914. *Cemeteries of Abydos II, 1911-12.* London: Egypt Exploration Society.

Pérez Largacha, A., 1993. Some suggestions and hypotheses concerning the Maadi culture and the expansion of Upper Egypt, *Göttinger Miszellen,* **135**, 41-52.

Pérez Largacha, A., 1994. The Nile Delta during Nagada III, in G. M. Zaccone and T. R. di Netro (eds.), *Sesto congresso internazionale di egittologia,* 489-495. Turin: International Association of Egyptologists.

Pérez Largacha, A., 1995. Chiefs and Protodynastic Egypt. A Hydraulic Revolution?, *Archéo-Nil,* 79-85.

Peters, J., 1986. A revision of the faunal remains from two Central Sudanese Sites: Khartoum Hospital and Esh Shaheinab, *Archeozoologia,* **5**, 11-35.

Petrie, W. M. F., 1901. *Diospolis Parva: the cemeteries of Abadiyeh and Hu 1898-9.* London: Egypt Exploration Fund.

Petrie, W. M. F., 1902. *Excavations at Abydos.* London: Anthropological Institute.

Petrie, W. M. F., 1914. *Tarkhan II.* London: School of Archaeology in Egypt.

Petrie, W. M. F., 1917. *Tools and Weapons.* London: British School of Archaeology in Egypt; Constable & Co Ltd; B. Quaritch.

Petrie, W. M. F., 1920. *Prehistoric Egypt.* London: B. Quaritch.

Petrie, W. M. F., 1921. *Corpus of Prehistoric Pottery and Palettes.* London: British School of Archaeology in Egypt.

Petrie, W. M. F., 1953. *Corpus of Proto-Dynastic Pottery.* London: British School of Egyptian Archaeology & B. Quaritch.

Petrie, W. M. F. and J. E. Quibell, 1896. *Naqada and Ballas.* London: B. Quaritch.

Petrie, W. M. F., G. A. Wainwright and H. Gardiner, 1913. *Tarkhan I and Memphis V.* London: School of Archaeology in Egypt.

Podzorski, P. V., 1990. *Their Bones Shall Not Perish. An Examination of Predynastic Skeletal Remains from Naga-ed-Dêr in Egypt.* New Malden: SIA Publishing.

Podzorski, P. V., 1999. Naga ed-Deir, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt*, 551-554. London: Routledge.

Porat, N. and Y. Goren, 2001. Petrography of the Naqada IIIa Canaanite Pottery from Tomb U-j in Abydos, in U. Hartung (ed.), *Umm el-Qaab II. Importkeramik aus dem Friedhof U in Abydos (Umm el-Qaab) und die Beziehungen Ägyptens zu Vorderasien im 4. Jahrtausend v. Chr.*, 466-481. Mainz am Rhein: Verlag Philipp von Zabern.

Postgate, N., T. Wang and T. A. H. Wilkinson, 1995. The evidence for early writing: utilitarian or ceremonial, *Antiquity*, **69**, 459-480.

Prominska, E., 1984. The demography of the populations from Kadero (Central Sudan), in L. Krzyżaniak and M. Kobusiewicz (eds.), *Origin and Early Development of Food-producing Cultures in North-eastern Africa*, 327-331. Poznań: Polish Academy of Sciences, Poznań Branch: Poznań Archaeological Museum.

Quibell, J. E. and G. F. W, 1902. *Hierakonpolis II.* London: B. Quaritch.

Quirke, S., 1992. *Ancient Egyptian Religion.* London: British Museum Press.

Randall MacIver, D. and A. C. Mace, 1902. *El-Amrah and Abydos, 1899-1901.* London: Egypt Exploration Fund.

Redmount, C., 1995. The Wadi Tumilat and the 'Canal of Pharaohs', *Journal of Near Eastern Studies*, **54**, (2), 127-135.

Reinold, J., 1982. Les fouilles pré- et proto-historiques de la section français de la Direction des Antiquités du Soudan: les campagnes 1984-5 et 1985-6, *Archéologie eu Nil Moyen*, **2**, 17-56.

Reisner, G. A., 1908. *The Early Dynastic Cemeteries of Naga-ed-Dêr I.* Leipzig: J. C. Hinrichs.

Rizkana, I. and J. Seeher, 1987. *Maadi I. The Pottery of the Predynastic Settlement.* Mainz am Rhein: Verlag Philipp von Zabern.

Rizkana, I. and J. Seeher, 1988. *Maadi II. The Lithic Industries of the Predynastic Settlement.* Mainz am Rhein: Verlag Philipp von Zabern.

Rizkana, I. and J. Seeher, 1989. *Maadi III. The Non-lithic Small Finds and the Structural Remains of the Predynastic Settlement.* Mainz am Rhein: Verlag Philipp von Zabern.

Rizkana, I. and J. Seeher, 1990. *Maadi IV: The Predynastic Cemeteries of Maadi and Wadi Digla.* Mainz am Rhein: Verlag Philipp von Zabern.

Roaf, M., 1990. *The Cultural atlas of Mesopotamia and the ancient Near East.* New York: Facts on File.

Robins, G., 1988. Ancient Egyptian Sexuality, *Discussions in Egyptology*, **11**, 61-72.

Robins, G., 2001. Color Symbolism, in D. B. Redford (ed.), *The Oxford Encyclopedia of Ancient Egypt*, 291-294. Oxford: Oxford University Press.

Rothenberg, B. and E. S. El Gayar, 1995. Predynastic and Old Kingdom copper metallurgy in South Sinai, in F. A. Esmael (ed.) *Proceedings of the First International Conference on Ancient Egyptian Mining and Metallurgy and Conservation of Metallic Artifacts. Cairo, Egypt. 10-12 April 1995*, 157-158. Cairo: Egyptian Antiquities Organization Press.

Rowland, J. M., 1998. *An Analytical Study into the Distribution of Wealth at the Egyptian Predynastic Cemetery Site of Kafr Hassan Dawood.* Unpublished MA thesis, Institute of Archaeology, University College London.

Rowland, J. M., in press a. The application of Mortuary Data to the Problem of Social Transformation in the Delta from the Terminal Predynastic to the Early Dynastic Period, in S. Hendrickx, R. F. Friedman, K. M. Ciałowicz and M. Chlodnicki (eds.), *Egypt at its Origins. Studies in Memory of Barbara Adams (Proceedings of the International Conference "Origin of the State. Predynastic and Early Dynastic Egypt", Krakow, 28th August - 1st September 2002).* Leuven: Peeters Publishing.

Rowland, J. M., in press b. The transition to state society in Egypt: problems and possibilities of applying mortuary evidence, in A. Cooke and F. Simpson (eds.), *Proceedings of Current Research in Egyptology II, Liverpool 2001.* Oxford: Archaeopress.

Rowland, J. M. and F. A. Hassan, 2003. The Computerised Database and Potential for a Geographic Information System at Kafr Hassan Dawood, in Z. Hawass (ed.), *Egyptology at the Dawn of the Twenty-first Century: Proceedings of the Eighth International Congress of Egyptologists, Cairo 2000*, 416-423. Cairo: American University in Cairo Press.

Saad, Z. Y., 1947. *The Royal Excavations at Saqqara and Helwan (Cairo, 1941-45).* Cairo: l'Institut français d'archéologie orientale.

Saad, Z. Y., 1951. *The Royal Excavations at Helwan (1945-1947).* Cairo: l'Institut français d'archéologie orientale.

Saad, Z. Y., 1969. *The Excavations at Helwan: Art and Civilization in the First and Second Egyptian Dynasties.* Norman: University of Oklahoma Press.

Sahlins, M. and E. R. Service, (eds.) 1960. *Evolution and Culture.* Ann Arbor: University of Michigan Press.

Savage, S. H., 1995. *Descent, Power, and Competition in Predynastic Egypt: Mortuary Evidence from Cemetery N7000 at Naga-ed-Der.* Unpublished PhD thesis, Arizona State University.

Savage, S. H., 2000. The Status of Woman in Predynastic Egypt as Revealed Through Mortuary Analysis, in A. E. Rautman (ed.), *Reading the Body: Representations and Remains in the Archaeological Record*, 77-92. Philadelphia: University of Pennsylvania Press.

Savage, S. H., 2001. Some Recent Trends in the Archaeology of Predynastic Egypt, *Journal of Archaeological Research*, 9, (2), 101-155.

Saxe, A. A., 1970. *Social dimensions of mortuary practices.* Unpublished PhD thesis, University of Michigan.

Saxe, A. A., 1971. Social dimensions of mortuary practices in a Mesolithic population from Wadi Halfa, Sudan, in J. A. Brown (ed.), *Approaches to the Social Dimensions of Mortuary Practices*, 39-57. Washington DC: Memoir of the Society for American Archaeology.

Schenkel, W., 1978. *Die Bewässerungsrevolution im Alten Ägypten.* Mainz am Rhein: Verlag Philipp von Zabern.

Schott, S., E. Neuffer and K. Bittel Erstattet, 1932. Bericht über die Zweite vom Deutschen Institut für Ägyptische Altertumskunde nach dem Ostdelta-Rand und in das Wadi Tumilat unternommene Erkundungsfahrt, *Mitteilungen des Deutschen Archäologischen Instituts abteillung Kairo*, **2**, 39-73.

Schulman, A. R., 1991/92. Narmer and the Unification: A Revisionist view, *Bulletin of the Egyptological Seminar* 11, 79-105.

Seeher, J., 1990. Maadi - eine prädynastische Kulturgruppe zwischen Oberägypten und Palästina, *Praehistorische Zeitschrift*, **65**, 123-156.

Seeher, J., 1992. Burial customs in Predynastic Egypt: A view from the Delta, in E. C. M. van den Brink (ed.), *The Nile Delta in Transition; 4th-3rd Millennium BC. Proceedings of the Seminar held in Cairo, 21-24 October 1990 at the Netherlands Institute of Archaeology and Arabic Studies*, 225-233. Cairo: Edwin C. M. van den Brink.

Seeher, J., 1999a. Ma'adi and Wadi Digla, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt*, 455-458. London: Routledge.

Seeher, J., 1999b. Abusir el-Meleq, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt*, 91-93. London: Routledge.

Seidlmayer, S., 1998. The Rise of the State to the Second Dynasty, in R. Schulz and M. Seidel (eds.), *Egypt The World of the Pharaohs*, 25-40. Cologne: Könemann.

Service, E. R., 1962. *Primitive Social Organization.* Second Edition. New York: Random House.

Sethe, K., 1922. Die aegyptischen Ausdrücke für rechts und links und die Hieroglyphenzeichen für westen und osten, *Nachrichten der Königlichen Gesellschaft der Wissenschaften zu Göttingen. Philologisch-historische Klasse*, **Heft 2**, 197-242.

Sethe, K., 1930. *Urgeschichte und älteste religion der Ägypter.* Leipzig: Deutsche Morgenländische Gesellschaft.

Shaheen, A.-D. M., 1998. Syro-Palestinian Relations in the Early Bronze II Period: Reassessment, *Göttinger Miszellen*, **163**, 95-99.

Shaw, I., 2000. The evidence for amethyst mining in Nubia and Egypt, in L. Krzyżaniak, K. Kroeper and M. Kobusiewicz (eds.), *Recent Research into the Stone Age of Northeastern Africa*, 219-227. Poznań: Poznań Archaeological Museum.

Shennan, S., 1997. *Quantifying Archaeology.* Edinburgh: Edinburgh University Press.

Shennan, S. J., 1975. The social organisation at Branc, *Antiquity*, **49**, 279-288.

Shepherd, B., 1997. *Statistics in Excel, Made Easy.* Plymouth: Barry Shepherd.

Siegemund, R. H., 1999. *A critical review of theories about the origin of the ancient Egyptian state.* Unpublished PhD thesis, University of California.

Sinclair, P., 1996. *Preliminary report on the Joint Swedish Egyptian field season April/May 1996 at Kafr Hassan Dawood, Wadi Tumilat, Egypt*

Smith, H. S., 1992. The Making of Egypt: A review of the influence of Susa and Sumer on Upper Egypt and Lower Nubia in the 4th millennium BC, in R. F. Friedman and B. Adams (eds.), *The Followers of Horus. Studies dedicated to Michael A. Hoffman*, 235-246. Oxford: Egyptian Studies Association Publication.

Sneath, P. and R. Sokal, 1973. *Numerical Taxonomy: the principles and practice of numerical classification.* San Francisco: W. H. Freeman and Company.

Spencer, A. J., 1979. *Brick Architecture in Ancient Egypt.* Warminster: Aris and Phillips Ltd.

Spencer, A. J., 1993. *Early Egypt.* London: British Museum Press.

Spencer, C., 1990. On the Tempo and Mode of State Formation: Neoevolutionism Reconsidered, *Journal of Anthropological Archaeology*, **9**, 1-30.

Steward, J. H., 1955. *Theory of Culture Change: the methodology of multilinear evolution.* Urbana: University of Illinois Press.

Tainter, J. A., 1978. Mortuary practices and the study of prehistoric social systems, in M. B. Schiffer (ed.), *Advances in Archaeological Method and Theory*, **1**, 105-137. New York: Academic Press

Tassie, G. J., in preparation. Tattooing in Ancient Egypt and a Possible Example of Predynastic Tattooing Needles.

Tassie, G. J. and J. F. L. van Wetering, 2003. Early Cemeteries of the East Delta: Kafr Hassan Dawood Minshat Abu Omar, and Tell Ibrahim Awad, in Z. Hawass (ed.), *Egyptology at the Dawn of the Twenty-first century: Proceedings of the Eighth International Congress of Egyptologists, Cairo 2000*, 599-507. Cairo: American University in Cairo Press.

Taylor, J. H., 2001. *Death and the Afterlife in Ancient Egypt.* London: British Museum Press.

Trigger, B. G., 1983. The rise of Egyptian Civilization, in B. G. Trigger, B. J. Kemp, D. O'Connor and A. B. Lloyd (eds.), *Ancient Egypt: A Social History*, 1-70. Cambridge: Cambridge University Press.

Trigger, B. G., 1987. Egypt: A Fledgling Nation, *Journal of the Society for Studies of Egyptian Antiquities*, **17**, 56-66.

Trigger, B. G., 1998. *Sociocultural Evolution.* Oxford: Blackwell Publishers Ltd.

Troy, L., 1995. *Excavation Project Kufr Nigm 1984-1990, Zagazig University Institute of Ancient Near Eastern Studies.* Unpublished report.

Tucker, T. L., 1997. *Bioarchaeology of Kafr Hassan Dawood, Ismailia, East Delta, Egypt.* Unpublished report.

Tucker, T. L., 2003. Bioarchaeology of Kafr Hassan Dawood: Preliminary Investigations, in Z. Hawass (ed.), *Egyptology at the Dawn of the Twenty-first Century: Proceedings of the Eighth International Congress of Egyptologists, Cairo 2000*, 530-535. Cairo: American University in Cairo Press.

Tutundžic, S. P., 1989. The problem of foreign north-eastern relations of Upper Egypt, particularly in Badarian period: an aspect, in L. Krzyżaniak and M. Kobusiewicz (eds.) *Late Prehistory of the Nile Basin and the Sahara,* 255-260. Poznań: Poznań Archaeological Museum.

Tutundžic, S. P., 1994. Meaning and use of the term "Predynastic" in Egyptian Archaeology, in G. M. Zaccone and T. R. di Netro (eds.), *Sesto congresso internazionale di egittologia. Atti. Vol. 1,* 605-611. Turin: International Association of Egyptologists.

Ucko, P., 1969. Ethnography and archaeological interpretation of funerary remains, *World Archaeology,* **1,** (1969/70), 262-80.

van den Brink, E. C. M., 1988. The Amsterdam University Survey Expedition to the Northeastern Nile Delta (1984-1986), in E. C. M. van den Brink (ed.), *The Archaeology of the Nile Delta, Egypt: Problems and Priorities. Proceedings of the Seminar held in Cairo, 19-22 October 1986, on the occasion of the fifteenth anniversary of the Netherlands Institute of Archaeology and Arabic Studies in Cairo,* 65-114. Amsterdam: Netherlands Foundation for Archaeological Research in Egypt.

van den Brink, E. C. M., 1989. A Transitional Late Predynastic - Early Dynastic Settlement Site in the Northeastern Nile Delta, Egypt, *Mitteilungen des Deutschen Archäologischen Instituts abteillung Kairo,* **45,** 55-108.

van den Brink, E. C. M., 1992a. Preliminary Report on the Excavations at Tell Ibrahim Awad, Seasons 1988-1990, in E. C. M. van den Brink (ed.), *The Nile Delta in Transition; 4th-3rd Millennium BC. Proceedings of the Seminar held in Cairo, 21-24 October 1990, at the Netherlands Institute of Archaeology and Arabic Studies,* 43-68. Tel Aviv: Edwin C. M. van den Brink.

van den Brink, E. C. M., 1992b. Corpus and Numerical Evaluation of the "Thinite" Potmarks, in R. F. Friedman and B. Adams (eds.), *The Followers of Horus. Studies dedicated to Michael Allan Hoffman,* 265-296. Oxford: Oxbow.

van den Brink, E. C. M., 1993. Settlement Patterns in the Northeastern Nile Delta during the fourth-second millennium BC, in L. Krzyżaniak, M. Kobusiewicz and J. Alexander (eds.), *Environmental Change and Human Culture in the Nile Basin and Northern Africa until the Second Millennium BC,* 279-304. Poznań: Poznań Archaeological Museum.

van den Brink, E. C. M., 1996. The incised *serekh*-signs of Dynasties 0-1. Part I: complete vessels, in A. J. Spencer (ed.), *Aspects of Early Egypt,* 133-150. London: British Museum Press.

van den Brink, E. C. M., 2001. The Pottery-Incised Serekh-Signs of Dynasties 0-1. Part II: Fragments and Additonal Complete Vessels, *Archéo-Nil,* **11,** 23-100.

van Gennep, A., 1960. *The Rites of Passage.* London: Routledge and Kegan Paul.

van Haarlem, W. M., 1993. Additions and corrections to the publication of a First Dynasty tomb from Tell Ibrahim Awad (Eastern Nile Delta), *Göttinger Miszellen,* **133,** 37-52.

van Haarlem, W. M., 1995. Temple Deposits at Tell Ibrahim Awad - a preliminary report, *Göttinger Miszellen,* **148,** 45-47.

van Haarlem, W. M., 1996. Temple Deposits at Tell Ibrahim Awad II - an update, *Göttinger Miszellen,* **154,** 31-34.

van Haarlem, W. M., 1997. Imitations in pottery of stone vessels in a Protodynastic tomb from Tell Ibrahim Awad, *Archéo-Nil,* **7,** 145-150.

van Haarlem, W. M., 1998a. Les fouilles de Tell Ibrahim Awad (delta oriental du Nil): Résultats récents, *Bulletin du Societe Francaise d'Egyptologie*, **141**, 8-19.

van Haarlem, W. M., 1998b. The excavations at Tell Ibrahim Awad (Eastern Nile Delta): Recent results, in C. J. Eyre (ed.), *Proceedings of the Seventh International Congress of Egyptologists, Cambridge 1995*, 504-514. Leuven: Peters.

van Haarlem, W. M., 2000. An Introduction to the site of Tell Ibrahim Awad, *Ägypten und Levante*, **10**, 13-16.

van Siclen, C., 1999. Tell Basta, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Egypt*, 776-778. London: Routledge.

van Wetering, J. F. L. and G. J. Tassie, in press. Socio-political hierarchy of First Dynasty Sites; A ranking of East Delta cemeteries based on grave architecture, in A. K. Eyma and C. J. Bennett (eds.), *A Delta-Man in Yebu*, Leiden.

Vandier, J., 1952. *Manuel d'archéologie égyptienne. Les époques de formation.* Paris: Picard.

von der Way, T., 1992. Excavations at Tell el-Fara'in/Buto in 1987-1989, in E. C. M. van den Brink (ed.), *The Nile Delta in Transition; 4th-3rd millennium BC. Proceedings of the Seminar held in Cairo, 21-24 October 1990, at the Netherlands Institute of Archaeology and Arabic Studies*, 1-20. Tel Aviv: Edwin C. M. van den Brink.

von der Way, T., 1997. *Tell el-Fara'în - Buto I. Ergebnisse zum frühen Kontext Kampagnen der Jahre 1983-1989.* Mainz am Rhein: Verlag Philipp von Zabern.

Wainwright, G. A., 1923. The Red Crown in Early Prehistoric Times, *Journal of Egyptian Archaeology*, **9**, 26-33.

Wendorf, F. W. and R. Schild, (eds.) 1976. *Prehistory of the Nile Valley*. New York: Academic Press.

Wenke, R. J., 1991. The Evolution of Early Egyptian Civilization: Issues and Evidence, *Journal of World Prehistory*, **5**, (3), 279-328.

Wenke, R. J., 1999. Mendes, Predynastic and Early Dynastic, in K. A. Bard (ed.), *Encyclopedia of the Archaeology of Ancient Egypt*, 499-501. London: Routledge.

Wildung, D., 1984. Terminal prehistory of the Nile Delta: theses, in L. Krzyżaniak and M. Kobusiewicz (eds.), *Origin and Early Development of Food-Producing Cultures in North-Eastern Africa*, 265-269. Poznań: Polish Academy of Sciences, Poznań Branch. Poznań Archaeological Museum.

Wildung, D., 1995. Aussendienst: Die Münchner Ostdelta-Grabung, in S. Schoske and A. Grim (eds.), *Staatliche Sammlung Ägyptischer Kunst München*, 81-86. Mainz am Rhein: Verlag Philipp von Zabern.

Wildung, D., 1997. *Egypt from Prehistory to the Romans.* Cologne: Taschen.

Wilkinson, R. H., 1994. *Symbol and Magic in Egyptian Art.* London: Thames and Hudson Ltd.

Wilkinson, T. A. H., 1996. *State Formation in Egypt - Chronology and Society.* Oxford: BAR International Series 651.

Wilkinson, T. A. H., 1999. *Early Dynastic Egypt.* London: Routledge.

Wilkinson, T. A. H., 2000. Political Unification: towards a reconstruction, *Mitteilungen des Deutschen Archäologischen Instituts abteillung Kairo*, **56**, 377-395.

Williams, B. B., 1986. *Excavations Between Abu Simbel and the Sudan Frontier, Keith C. Seele, Director. Part 1: The A-Group Royal Cemetery at Qustul: Cemetery L.* Illinois: The Oriental Institute of the University of Chicago.

Wilson, P., 2001. Sais and its secrets, *Egyptian Archaeology,* **18**, 3-5.

Winkler, H. A., 1938. *Rock Drawings of Southern Upper Egypt; Vol 1, Sir Robert Mond Desert expedition; Season 1936-37.* London: Egypt Exploration Fund.

Winkler, H. A., 1939. *Rock Drawings of Southern Upper Egypt; Vol 2, Sir Robert Mond Desert expedition; Season 1937-38.* London: Egypt Exploration Fund.

Wittfogel, K. A., 1957. *Oriental Despotism: a comparative study of total power.* New Haven: Yale University Press.

Woods, W., 1987. The Archaic stone tombs at Helwan, *Journal of Egyptian Archaeology,* **73**, 59-70.

Wuttmann, M., 1995. Early Metallurgy of Copper and Copper Alloys in Egypt, in F. A. Esmael (ed.), *Proceedings of the First International Conference on Ancient Egyptian Mining and Metallurgy and Conservation of Metallic Artifacts. Cairo, Egypt. 10-12 April 1995,* 183-187. Cairo: Egyptian Antiquities Organization Press.

Yoffee, N., 1993. Too many chiefs? (or, Safe texts for the '90s), in N. Yoffee and A. Sherratt (eds.), *Archaeological theory: who sets the agenda?*, 60-78. Cambridge: Cambridge University Press.